Green India Mission

Perspective Plan

(Revised)

2016-17 to 2020-21

MP FOREST DEPARTMENT

Annexures ....

Chapter-1
Introduction

1.1. About Madhya Pradesh

The state of Madhya Pradesh is centrally located and is often called as the "Heart of India".The State is home to a rich cultural heritage and has practically everything; innumearable monuments, large plateau, spectacular mountain ranges, meandering rivers and miles and miles of dense forest offering a unique and exciting panorama of wildlife in sylvan surroundings. With total geographical area of 308,245 sq km and population of 7,26,26,809 Madhya Pradesh is the second largest state in terms of geographical area and sixth largest state in terms of total population in India. The recorded forest area of the state is 94689 sq.km. constituting 30.72 % of the geographical area of the state and 12.30% of the forest area of India. As per 2015 State of Forest Report 77,462 Sq. km. of area of the state is under forest cover. With its rich and diverse forests and natural resources, the state is home to over 15.31 million people belonging to Scheduled Tribes which makes 21.1% of the total population of the state. The main tribes are Gond, Bhil, Korku, Halba, Kaul, Maria. Besides there are three primitive tribes namely Bharia, Baiga and Saharia residing in the state.

Madhya Pradesh has an agrarian economy and a considerable proportion of the population is dependent on agriculture and forest resources for their livelihood. The major crops of Madhya Pradesh are Wheat, Soyabean, Gram, Sugarcane, Rice, Maize, Cotton etc. Minor forest produce also contribute substantially to rural economy. The state is rich in mineral and natural capital, and has the largest reserves of diamond and copper in India. The other major mineral reserves include those of Coal, Maganese and Dolomite.

1.2. Ecological Importance of Madhya Pradesh in Central Indian Landscape

The topography of Madhya Pradesh is defined by Narmada-Sone Valley which is narrow and long valley extending through almost the whole of the state from east to west. To the north of this valley lies the Central Highland, to the south the Satpura-Maikal ranges and to the south east the Eastern plateau. Madhya Pradesh constitutes a major portion of the Central Indian Landscape. This Central Indian landscape is bound by the Aravalli Range in the north-west, the Satpura Range in the south, Chota Nagpur plateau in the north east and the Odisha hills in the south-east. Within this zone are located several hill ranges with elevations ranging between 200 m to 900 m such as the Vindhyas, Mahadeo Hills and the Maikal Range. Much of the region is forested, as the hills and plateaus with patches of shallow infertile soils do not permit extensive cultivation. This landscape covers a vast area encompassing the states of Madhya Pradesh, Chhattisgarh, Jharkhand and parts of Rajasthan, Maharashtra, Odisha and Andhra Pradesh. According to the Satpura hypothesis proposed by S.L. Hora (Hora 1944) the Central India landscape is supposed to act as a land bridge for the migration of the wet zone flora and fauna from the north-eastern hills to the Western Ghats.The Malayan floral and faunal elements present in the Western Ghats are considered to have used the Garo Hills-Rajmahal Hills-Chota Nagpur Plateau and the Satpura Range as a pathway to reach the Western Ghats.

1.3 Forest in Madhya Pradesh

Madhya Pradesh is one of the most blessed states of India in terms of natural resources including rich and diverse forests. Forests which are spread over 94689 sq km, cover about 30.72 per cent of State's total area of 3.08 sq km. The geographical and biotic diversity of the state is well reflected in its 18 forest types ranging from thorn-forests to subtropical hill forests. Teak and sal forests are the pride of the state. The Forest Department and the Forest Development Corporation have done extensive teak plantations during the last few decades. The dense forests of teak lie in Jabalpur, Seoni, Balaghat, Panna, Sehore, Dewas, Hoshangabad, Harda, Sidhi, Umaria, Anuppur and Shahdol districts.

This significant resource of the state is being conserved and harnessed through innovative measures like community participation and decentralization. The state has been a pioneer in making forestry people-oriented with 15228 joint Forest Management Committees (JFMCs) involved in protection and management of the forest. Forest and forest produce based industries make an important contribution to the economy of the state. Owing to economic importance of forest wealth, efforts are being made for the systematization of the trade of forest produce in the state. The state takes care of the trade of nationalized forest produce viz., Tendu Leaf, Sal Seed and Kullu Gum. In addition, a number of forest produce like Aonla, Harra, Lac, Achar, Mahua etc. are also being collected & traded through network of Cooperative Societies. Aonla, Gum, Tendu Leaf, Sal seed, Harra and various medicinal plant of Madhya Pradesh are in great demand in national and international markets. Tendu leaf collection activities alone account for an income of about Rs. 145 crore every year to the forest dwellers. State has declared Minimum Support Price (MSP) for various forest produce like Mahua, Achar, Harra, Lac etc.

As per SFR 2015 the forest and tree cover in Madhya Pradesh is shown below:

S. No	Parameter	Area (Sq. Km)	Percentage w.r.t. Total Geographical Area
1.	Total Geographical Area	308,245	-
2	Forest Area	94,689	30.72
3.	Forest Cover	77,462	25.31
4.	V.D.F	6629	2.15
5.	M.D.F	34902	11.32
6.	Open	35931	11.66
7.	Tree cover	7713	2.52

1.4 Wildlife of Madhya Pradesh

Madhya Pradesh is endowed with rich and diverse forest resources. The state of Madhya Pradesh has an area of 94,689 sq km. as recorded forest comprising of about 30.72 % of the total geographical area of the state. This vast tract of forest is home to several wild animal species. Madhya Pradesh is one of the most important states as far as conservation of wild life and biodiversity is concerned. The state has a long history of conservation efforts. Even before the enactment of Wild Life (Protection) act 1972 Madhya Pradesh state has constituted Protected

Areas. With the enactment of Wild Life (Protection) act 1972 the state began setting up a network of Protected Areas in the form of National Park and Sanctuaries. At present the state has 9 National Parks and 25 Wildlife Sanctuaries spread over an area of 10,862 sq km. Thus protected area constitutes 11.40% of the total forest area and 3.52% of the geographical area of the state. Six protected area have been declared as tiger reserve. As per Tiger census 2014 the Central Indian Landscape has a Tiger population of 688 tigers out of which 308 tigers are in Madhya Pradesh. It is quite evident that the Central Indian Landscape is amongst the finest tiger habitats of India and the Madhya Pradesh state being the major contributor.
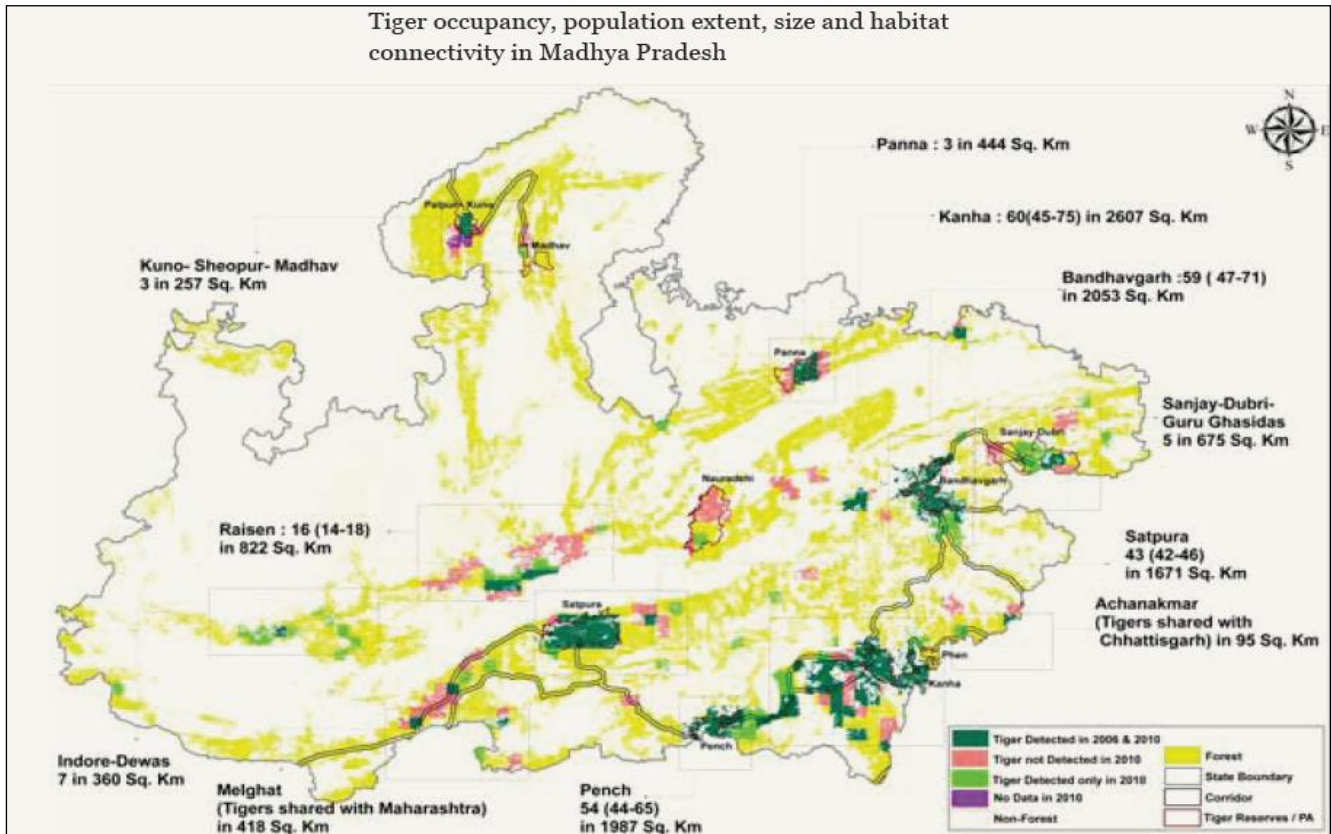
Figure 1: Protected areas and sanctuaries of Madhya Pradesh

1.5 Wild Life Corridors in M.P.

As per the Tiger Census Report 2014, the Central Indian landscape has seven meta-populations of tigers that have a long term future, provided they remain connected through corridors. To sustain the natural biodiversity and to maintain the biological connectivity between important protected areas and enhance the gene flow, following corridors are identified in the state:

1. Pench-Kanha-Achanakmar
2. Bandhavgarh-Kanha-Gurughasidas-Achanakmar
3. Satpura-Melghat
4. Pench-Satpura
5. Indore-Dewas-Ratapani-Nauradehi
6. Bandhavgarh-Sanjay-Dubri-Guru-Ghasidas
7. Ranthambore-Kuno-Sheopur-Shivpuri.

These corridors provide vital linkages between the protected areas of the Central Indian Landscapes and are essential for the conservation of nation's bio-diversity. The tiger occupancy

and potential connecting corridors are shown in figure 1. The populations in Pench-Kanha-Achanakmar, Satpura-Melghat and Sanjay-Dubri -Guru-Ghasidas are well connected, but corridors are facing increasing pressure and hence need to be protected. The Populations in Madhav National Park, Panna, Bandhavgarh and Ratpani are scarcely connected to other populations and face a threat of being isolated from other populations due to increasing fragmentation. The existence of viable habitat is critical to the survival of many species, and in many cases the fragmentation of habitat will lead to loss of biodiversity, extinction of many plant species, crowding of mobile species in smaller patches leading to increased competition and inbreeding. This will eventually lead to increasing edge effects resulting in change of climatic condition which will not only affect the animal but also the human population. Forests of Madhya Pradesh state have a vital role in negating the adverse effect as they not only form the viable habitat but also act as corridors between different habitats.

1.6   Biosphere Reserves in Madhya Pradesh

Central Indian Landscape also encompasses several biosphere reserves. Out of total 18 biosphere reserves of India, 4 biosphere reserves lie in this landscape. They are Panna, Pachmari, Amarkantak-Achanakmar and Simlipal biosphere reserve. Of these four biosphere reserves former 2 lie totally and the third one partially in Madhya Pradesh. Pachmari and Amarkantak-Achanakmar biosphere reserves are also the part of the World Network of Biosphere Reserves based on the UNESCO Man and the Biosphere (MAB) Program. This shows the importance of this landscape from biodiversity point of view also.
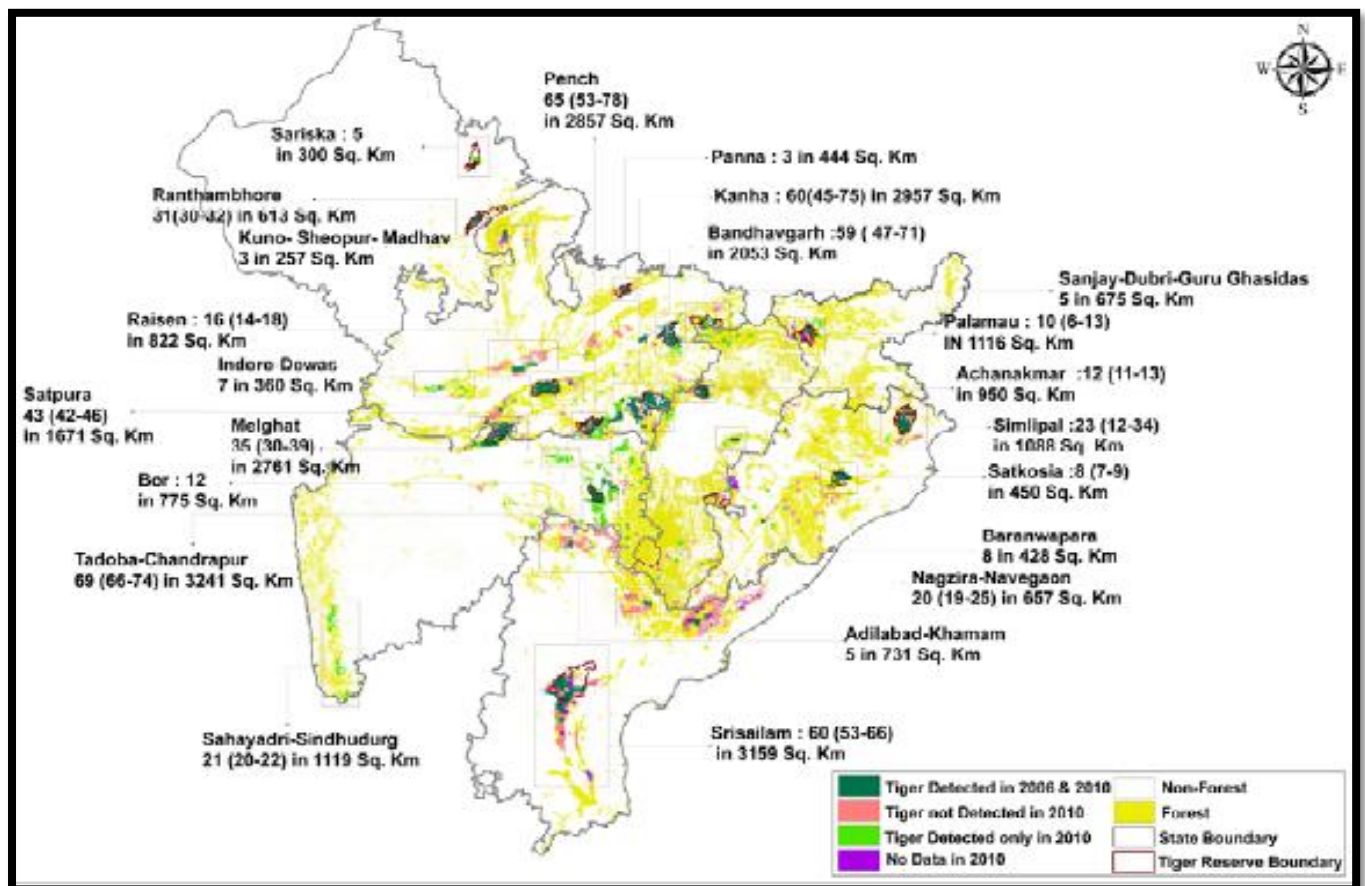
Figure 2 Biosphere Reserves of Madhya Pradesh

1.7   Major River Basins of Madhya Pradesh

There are ten major rivers that originate from the State. As Madhya Pradesh is located in the center of India, most of the rivers are interstate rivers. The rivers, namely Chambal, Sindh, Betwa, Ken flow northward and meet with Yamuna whereas the river Sone falls directly into Ganga. Narmada, Tapti and Mahi rivers flow westward and meet Arabian Sea whereas Wainganga and Pench rivers meet Godavari in the south. Rivers in Madhya Pradesh are mostly seasonal and rainfed, receiving maximum water flow during the monsoon season. The non-monsoon flow in some perennial rivers is mainly due to flow from groundwater. Due to varied topographical, rainfall and climatic conditions in the State, the availability of water is not uniform spatially or temporally. There is an increasing demand of water for human consumption, agriculture and industrial purposes, etc. This coupled with scanty rainfall in past few years, has led to water scarcity which has become a major concern in the State. The post monsoon flow in most of the rivers is used for irrigation which further reduces the already reduced flow in the rivers.

The drainage system of the state is governed by six major river basins, the details of which are as follows:

1.   **Ganga Basin**: River Ganga originated from the hills of Himalayas at Gangotri and meets Bay of Bengal. The basin extends into 11 states viz. Uttarakhand, Himachal Pradesh, Uttar Pradesh, Haryana, Delhi, Rajasthan, Madhya Pradesh, Bihar, Jharkhand, Chhattisgarh and West Bengal. In Madhya Pradesh, the basin extends up to the districts of Mandsaur, Ujjain, Shajapur, Rajgarh, Neemuch, Vidisha, Guna, Shivpuri, Datia, Gwalior, Morena, Sheopur, Bhind, Tikamgarh, Chhatarpur, Panna, Satna, Rewa, Ashoknagar, Dindori, Dhar, Ratlam, Indore, Dewas, Sehore, Raisen, Sagar, Bhopal and Damoh. The Ganga Basin can be further sub-divided into three sub-basins viz. Yamuna, Tons and Sone, details of which are discussed below:

a. Yamuna Sub Basin: Total geographical area of Yamuna sub-basin in Madhya Pradesh is 1, 42,250 sq km. The major rivers of this sub-basin in Madhya Pradesh are as given below:

Sr. No.	River	District of Origion	Length in MP(km)
1.	Chambal	Indore	320
2.	Sindh	Vidisha	461
3.	Jamni	Sagar	29
4.	Betwa	Bhopal	216
5.	Dhasan	Raisen	240
6.	Ken	Jabalpur	292

b. Tons sub basin: River Tons originates in Kaimur ranges in Satna district and flows through the fertile land of Rewa & Satna district. The river meets Ganga after flowing 246 km in Madhya Pradesh.

c. Sone Sub Basin: Sone river originates at Amarkantak. Total length of the river is 784 km. In Madhya Pradesh the river flows for 470 km. The river parallels Kaimur hills flowing east to north east to meet Ganga in Bihar state near Patna. The major tributaries of river Sone are Johilla, Mahanadi.

2.   **Narmada Basin:** River Narmada originates from Amarkantak and flows from east to west and joins Arabian Sea. Narmada is longest river in M.P. and fifth longest in India. Total length of the river is

1312 km and in Madhya Pradesh the river flows for a length of 1077 km. Major tributaries of the river Narmada are Banjar, Heran, Kolar, Suketa, Tawa, Tendoni, Beda, Sher, Shakkar, Man, jobat and Goi rivers. Narmada Basin is also very productive in term of agriculture and has very good soil quality and considerable forest area. The basin supports most of the biodiversity and tribal heritage of the state.

3.   **Godavari Basin**: River Wainganga originates in Satpura range of Seoni district (M.P) and flows south to Maharashtra in a winding and graceful course while developing extensive flood plains. It joins Wardha river (which also originates in Betul district of Madhya Pradesh) and joins Godavari in Mahrashtra. Wainganga and Wardha rivers pump enormous volume of water into Godavari river system. This basin covers one of the thickly forested tribal parts of Madhya Pradesh well on par with Narmada basin.

4.   **Tapti basin:** It is a small basin but an important one. The Tapti river originates in Madhya Pradesh and the basin supports good forest cover and has considerable tribal population. Tapti is one of the rivers of the state which originates and flows in rift valley. Total length of the river is 724 km. In Madhya Pradesh the length of the river is 332 km. Tapti flows east to west parallel to Narmada and joins Arabian Sea. The river is supported by its tributaries like Ambhara, Mona Purna, Kanhan rivers.

5.   **Mahi Basin:** Mahi basin is the smallest of the basin in M.P. River Mahi originates in Dhar district and join Gulf of Khambat. Total length of the river is 583 km of which 158 km traverses in Madhya Pradesh in Dhar and Jhabua district. The river is very important to otherwise dry region and is vital source of water.

6.   **Mahanadi Basin:** After the formation of Chhattisgarh state, the major portion of Mahanadi basin now lies in Chhattisgarh. Presently only 154 sq km. basin area of Hasdeo River in district Annuppur lies in Madhya Pradesh.

        The forests of Madhya Pradesh are vital to the river systems of Madhya Pradesh as well as for the major river systems of Central and Southern India and their tributaries.

1.8   Wastelands in Madhya Pradesh:

Wastelands (Area in sq.km.)				
Wasteland Area	Ravine	Dense and open Scrub	Underutilized forest land	Mining wastelands
40113.28	1453.13	2268.80	14417.22	98.68

- In the state of Madhya Pradesh 40113.28 sq km is under wasteland. This equates to 13% of state's total geographic area and 8.5 percent of country's total wastelands.
- As per the Wasteland Atlas of India (2011), underutilized forest land is present in 14417.22 sq. km. of the forest area. This indicates that over 15.22% of area under forest land is underutilized and should be treated.
- Mining wastelands are spread over an area of 98.68 Sq Km.
- Area under dense and open scrub is 2268.80 sq km. and forms the highest proportion of wastelands in the state.
- India has 7142.02 sq Km under ravine wasteland; out of which Madhya Pradesh has 1453.26 sq km. Thus 20.34% ravine wasteland area is present in Madhya Pradesh alone.

1.9   Demography

In Madhya Pradesh, total population as per the Census 2011 is 72.6 million, comprising of 52.6 million rural and 20.0 million urban population. Rewa has the largest share of rural population at 1.97 million (3.7% of the state's rural population) followed by Dhar (3.4%) and Satna (3.3%) whereas Indore has the highest share of urban population at 2.4 million (12.0%) followed by Bhopal (9.6%) and Jabalpur (7.2%).

1.9.1.   Growth rate

The growth rate of population in India during the last decade is 17.7% (Rural-12.3%; Urban - 31.8%). Similarly growth rate of population in Madhya Pradesh between 2001 and 2011 is 20.3% (Rural - 18.4% and Urban - 25.7%). In absolute numbers, out of the total increase of 12.3 million in the last decade, the contribution of rural and urban areas is 8.2 million and 4.1 million respectively.

1.9.2.1 Population density

India's population density is 382 individuals per sq km. However Madhya Pradesh is relatively less dense populated state with population density of 236 individuals per sq km. This shows an increase of 40 points from the Census 2001 figure of 196. Bhopal (855) turns out to be the most densely populated district followed by Indore (841) and Jabalpur (473). The minimum population density is in Dindori (94) followed by Sheopur (104) and Panna (142). In Madhya Pradesh, the rural population constitutes 72.4% and urban population 27.6% of the total population

1.9.3   Scheduled caste population

In Madhya Pradesh, the total Scheduled Caste population in Census 2011 is 11.3 million. Out of these, 8.3 million are in rural areas and 3.1 million in urban areas. In terms of proportion, the Scheduled Caste population constitutes 15.6% of the total population in the state. In India proportion of the Scheduled Caste population constitutes 16.6% of the total population in 2011 Census.

1.9.4   Scheduled tribe population

In India proportion of the Scheduled Tribe population constitutes 8.6% of the total population in 2011 Census. In Madhya Pradesh, the total Scheduled Tribe population returned in Census 2011 is 15.3 million, highest in the country. Of this, 14.3 million are in rural areas and 1.0 million in urban areas. In terms of proportion, the Scheduled Tribe population constitutes 21.1% of the total population.

- The state is home to 26.6 million of SC/ST population which constitutes 37.7% of state's total population.
- Of the SC/ST population, 22.6 million live in rural areas and only 4 million reside to urban areas.
- MP state is home to 3 primitive tribes also. They are Bharia, Baiga and Saharia.

1.9.5   Forest dwelling population and scheduled areas

The forests of state and their surrounding areas are home to a large number of tribal communities (over 15 million); who are children of nature and their lifestyles are conditioned by the eco-system. They are predominantly dependent on forest resources for their livelihood and survival. While the forest resources have dwindled, the populations of forest dwelling communities have increased exponentially in last few decades which has led to increasing need of land for agriculture and other forest resources,

Thus contributing to the rapid degradation of forests. This poses a great challenge for state as survival of both "forests" and "forest dependent communities" is at stake.

Scheduled Areas: Madhya Pradesh is home to country's largest population of scheduled tribes and forest dwelling communities primarily dependent on forest resources for their livelihood and survival. Some blocks in districts of Jhabua, Alirajpur, Balaghat, Seoni, Shahdol, Umaria, Chindwara, Hoshangabad, Sheopur, Mandla, Dhar, Morena, Betul, Ratlam, Khargone, Khandwa, Anoopur and Badwani are identified as the Scheduled areas by the Scheduled Areas (states of Madhya Pradesh, Jharkhand and Chhattisgarh) Order, 2003. Most of the scheduled areas are abundant with forest cover and biodiversity.

1.9.6   Agriculture dependence

In India, as per Census 2011, out of 481.7 million total workers, 118.7 million are cultivators and another 144.3 million are agricultural laborers. Thus nearly 55% of the workers are engaged in agricultural activities. In Madhya Pradesh, as per Census 2011, out of 31.6 million total workers, 9.8 million are cultivators and another 12.2 million are agricultural laborers. Thus nearly 69.8% of the workers are engaged in agricultural activities either as cultivator or as agricultural laborer. Out of two-in-three males and four of every five females are engaged in agricultural activities either as cultivator or as agricultural laborer.

As can be seen from above figures, a significant working population of the state is dependent on agriculture for their livelihood. Agriculture contributes significantly to state's economy.

This makes state's population furthermore vulnerable to climate change as number of climate change studies by organizations such as TERI has predicted drastic effect of climate change on agriculture. The state is divided into 11 Agro-climatic zones and different parts of M.P are suited for multiple varieties of crops. Madhya Pradesh is leading producer of wheat, soya bean and pulses. While the belt around river Narmada is very productive, the northern and western part of Madhya Pradesh faces water scarcity and extreme climatic variations. Due to changing cropping pattern, reducing number of rain days, extreme variation in temperature and uneven rainfall, reducing soil quality due to erosion and mono-cropping, the agricultural productivity in many parts of the state might be negatively affected.

1.10 Dependence on Forests:

1.10.1 Fuel wood Dependence

Name	No of persons using fuel wood (millions)	No of persons using fuel wood from forests (millions)	Quantity of fuel-wood used (M.T)	Quantity of fuel wood from Forest (M.T)
India	853.879	199.631	216.421	58.747
Madhya Pradesh	51.007	24.839	13.665	7.191

As can be seen from the above statistics, in India around 853.879 million persons are dependent on fuel wood and around 23.3% of these are directly dependent on forest resources. But in Madhya Pradesh, out of 51 million populations dependent on fuel wood nearly 48.7% are dependent on Forest resources for fuel wood. This indicates higher dependence on forest for collection of fuel wood in Madhya Pradesh.

Name	Total livestock(million)	Livestock dependent on forests	Percentage
India	518.57	199.58	38.49
Madhya Pradesh	40.50	21.73	53.65

As can be seen from the figures, 53.65% of the total livestock of the state is dependent on forest as compared to 38.49% in India indicating higher pressure on state's forest due to grazing.

1.10.3 Quantity of Wood used in house construction, furniture and agriculture implements.

Name	House Construction (M.T)	Furniture (M.T)	Agricultural implements (M.T)
India	340.172	58.42	21.588
Madhya Pradesh	26.262	1.817	1.753

1.11 Joint Forest Management

Joint Forest Management is a concept of developing partnership between fringe forest user groups and the forest department on the basis of mutual trust and jointly defined roles and responsibilities with regard to forest protection and development. In JFM the user (local community) and the owner (Govt.) manage the resources jointly.

Involvement of rural communities living close to forests in protection and management of forest resources is enshrined in the National Forest Policy 1988.Translation of policy found expression in the resolution of Government of India, Ministry of Environment and Forests issued in June 1990.It envisaged that in lieu of the participation, the local communities will be entitled to sharing of usufructs in a manner specified by the concerned State Forest Departments. This led to the initiation of Joint Forest Management (JFM) programme.Madhya Pradesh is a pioneering state in implementing this programme. The Government of M.P. issued the first resolution in this regard in 1991. Learning from experiences, the State Government revised JFM resolution in 1995, 2000 and 2001. Steps are also being taken to integrate the local institutions by involving the Gram Sabha in the formation and functioning of JFM Committees.

The Government Resolution makes provision for three kinds of committees i.e. Forest Protection Committees (FPC) for protection of well-stocked forests, Village Forest Committees (VFC) for rehabilitating the degraded forest areas and Eco-development Committees (EDC) in and around Protected Areas (PAs) with a view to ensure biodiversity conservation in National Parks and Sanctuaries. The Committees are to be constituted with in a radius of 5 km from the periphery of forest.

So far 15228 JFM Committees have been constituted, of which 9650 are VFCs, 4747 are FPCs and 831are EDCs. A total of about 66,873 sq. km of forest area is under JFM, which is about 71 % of the total forest area of the State. More than 17 lakh families are involved in the programme. In the implementation of GIM active participation of these JFMCs has been envisaged.

Chapter-2

Green India Mission

2.1 Genesis

The National Mission for a Green India is one of the eight Missions under the National Action Plan on Climate Change (NAPCC). It recognizes that climate change phenomenon will seriously affect and alter the distribution, type and quality of natural biological resources of the country. The NAPCC addresses the urgent and critical concerns of sustainable development and identifies the close linkage of the economy with its natural resource base. The Green India Mission puts the "greening" in the context of climate adaptation and mitigation, aiming to enhance ecosystem services and provisioning services while addressing the livelihood issues of people living in and around forests.

GIM thus envisages a unique strategy for holistic treatment of selected areas aiming at overall improvement/restoration of forests and enhancing alternate and forest based livelihood opportunities of forest dependent communities, including tribal and other poor people along with building capacities of the communities.

The objectives of the Green India Mission at national level are:

a) Increased forest/tree cover on 5m ha of forest/non forest lands and improved quality of forest cover on another 5m ha (a total of 10m ha).
b) Improved ecosystem services including biodiversity,hydrological services and carbon sequestration as a result of treatment of 10 m ha.
c) Increased forest based livelihood income of about 3 million households living in and around the forests.
d) Enhanced annual CO2 sequestration by 50 to 60 million tones in the year 2020.

The objectives of the Green India Mission during 12th Plan period and one year spill over in 13th Plan includes increased forest/tree cover in 1.4 mha of forest/non-forest land and improved quality of forest cover in another 1.4 mha. of forest/nonforest land. It envisages to improve ecosystem services including biodiversity, hydrological services, carbon sequestration from the 2.8 mha of forest/non-forest lands as mentioned above and increased forest-based livelihood income of about 0.85 million households, predominantly from tribal community living in and around the forests. It will also achieve additional enhanced annual CO_2 sequestration by 14 to 17 million tones.

In accordance with the broad objectives of Green India Mission, Madhya Pradesh Forest Department seeks to implement activities in ecologically important and vulnerable regions of the state by ensuring the participation of forest dependent communities in its implementation.In Madhya Pradesh, the Mission will target the ecologically important and fragile areas for restoration and afforestation activities in the state and will support the livelihoods of forest dependent communities by making them a key stakeholder in mission activities.

2.2 Submissions and cross cutting interventions to be taken up under Green India Mission

S. No.	Sub-Missions
1	**Enhance quality of forest cover and improve ecosystem services**
1a	Moderately dense forest cover but showing degradation
1b	Eco-restoration of degraded open forest
	Type A With plenty of root stock
	Type B With Limited root stock - and open blanks
	Type C Of largely open areas with sparse undergrowth
1c	Restoration of grasslands
2	**Ecosystem restoration and increase in forest cover**
2a	Rehabilitation of shifting cultivation
2b	Restoring scrublands
2c	Restoring/planting sea-buckthorn
2d	Restoration of Mangroves
2e	Ravine Reclamation
2f	Restoration of abandoned mining areas
3	**Enhancing tree cover in urban and peri-urban areas (including institutional lands)**
4	**Agro-forestry and social forestry**
5	**Restoration of wetlands**
	Cross-cutting interventions
A	Improved fuel-use efficiency and promoting alternative energy sources
B	Community livelihood enhancement
C	Corridors for connectivity
D	Community conserved areas and sacred groves
E	Understanding, identifying and protecting areas/ catchments of hydrological importance

Chapter-3

Selection of Landscapes under Green India Mission

As per the Green India Mission guidelines, landscape level approach is to be taken up in implementation of mission activities. Landscapes at multiple levels will be identified on the basis of a combination of criteria & indicators. The selection process follows a hierarchical approach, and aims to identify broad landscapes of importance (L1) and narrow down to operational units/landscapes of 5,000 to 10,000 ha (L2) for planning and execution of activities under various sub-missions. JFMC/Village level units (L3) will be actual units for comprehensive micro plans and implementation of mission activities.

3.1 Selection of L1 Landscapes

The selection of L1 Landscapes has been done on the basis Agro-climatic Zones.

Agro climatic Zones

The classification mainly concentrates on the range of rainfall received, type and topography of the soils. Agro-climatic zone is a land unit in terms of major climate, superimposed on length of growing period (moisture availability period) whereas an agro-ecological zone is the land unit carved out of agro climatic zone superimposed on landform which acts as modifier to climate and length of growing period. The state of Madhya Pradesh has been divided into following 11 Agro-climatic Zones.

1. Chhattisgarh Plains
2. Northern Hills zone of Chhattisgarh
3. Kymore Plateau and Satpura hills
4. Vindhyan Plateau
5. Central Narmada valley
6. Gird zone
7. Bundelkhand zone
8. Satpura Plateau
9. Malwa Plateau
10. Nimar valley
11. Jhabua hills

The pictorial representation of these zones is given below:-
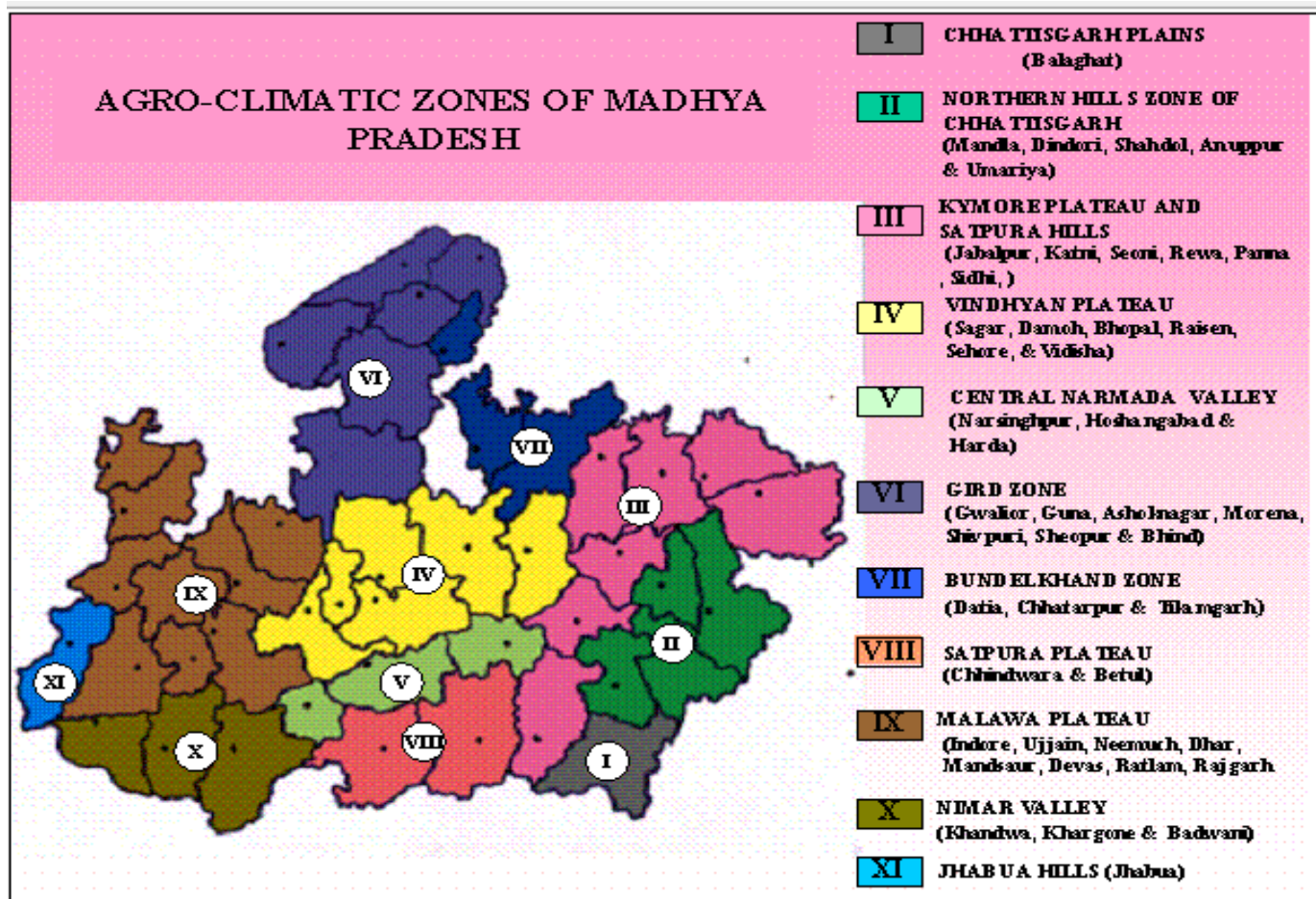
Figure 3 Agro Climatic Zones of Madhya Pradesh

Based on ecological significance and practical reasons, some minor changes have been done in the composition of these agro climatic zones and the state has been divided into 8 L1 landscapes for the implementation of Green India Mission. These changes/alterations are explained below:

- According to the Agro-climatic Zone Map, the districts of Datia, Chhattarpur and Tikamgarh constitute the Bundelkhand Zone. But, an Additional Central Assistance Scheme – Bundelkhand Special Package is already being implemented in the six districts of Madhya Pradesh, namely Datia, Chhattarpur, Tikamgarh, Sagar, Panna and Damoh. So to maintain conformity, these districts have been taken together as a part of the Bundelkhand Landscape.
- According to the Agro-climatic Zone Map, Balaghat is the only district in landscape I – Chhattisgarh Plains, so Balaghat district has been clubbed with landscape II of the agro-climatic zone to form the second landscape – Northern Hills Plain comprising of Balaghat, Mandla, Dindori, Shahdol, Umariya and Annuppur districts.
- According to the Agro-climatic Zone Map, Jhabua is the only district in landscape XI – Jhabua Hills, so it along with Badwani District of Landscape IX have been clubbed with landscape X of the agro-climatic zone to form the sixth landscape – Nimar-Jhabua Hills comprising of Jhabua, Khandwa, Khargone and Badwani.
- Jabalpur, Seoni of Landscape III, Landscape V and Landscape VIII (according to Agro climatic Zones) have been clubbed together to form the third landscape – Satpuda-Narmada landscape.

Figure 4- Selection of L1 landscapes for GIM

Accordingly the eight L1 landscapes selected are given in the table below:-

Sr. No.	L1 Landscape	Name	Forest Divisions within the landscape
1	Landscape (i)	Kymore plateau	East Sidhi, West Sidhi, Rewa, Satna, Katni
2	Landscape (ii)	Northern Hills Plains	North Shahdol, South Shahdol, Umaria, Annuppur, West Mandla, East Mandla, North Balaghat, South Balaghat
3	Landscape (iii)	Satpura- Narmada	Narsinghpur, Hoshangabad, Harda, East Chhindwara, West Chhindwara, South Chhindwara, North Betul, South Betul, West Betul, Jabalpur, North Seoni, South Seoni.
4	Landscape (iv)	Vindhya Plateau	Vidisha, Raisen, Bhopal, Obedullaganj, Sehore
5	Landscape (v)	Malwa Plateau	Neemuch, Mandsour, Ratlam, Dhar, Ujjain, Indore, Dewas, Shajapur, Rajgarh
6	Landscape(vi)	Nimar- Jhabua Hills	Jhabua, Alirajpur, Badwani, Sendhwa, Khargone, Badwah, Khandwa, Burhanpur
7	Landscape (vii)	Bundelkhand	Chhatarpur, Tikamgarh, Datia, North Panna, North Sagar, South Sagar, Damoh, S. Panna
8	Landscape (viii)	Gird	Bhind, Morena, Gwalior, Sheopur, Shivpuri, Ashoknagar, Guna
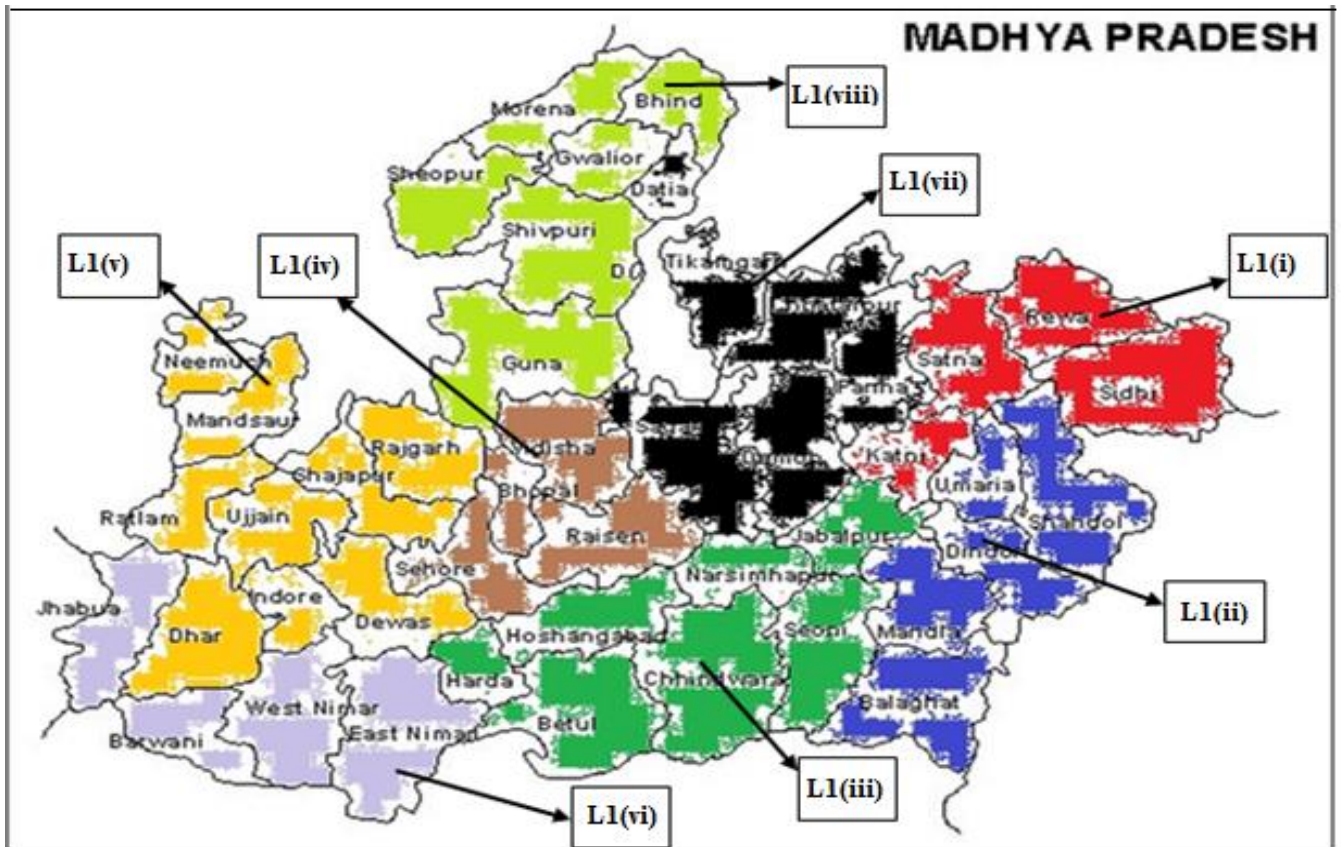
Figure 5: L1 Landscapes of Madhya Pradesh

3.2 Selection of L2 Landscapes

Green India Mission being one of the Missions of the National Action Plan on Climate Change, vulnerability of different regions of Madhya Pradesh to Climate Change has been the main factor for identifying L2 landscapes (operational units) that would be treated first under GIM. For this purpose, two major criteria have been used:

(i)   Impact of climate change on forests of Madhya Pradesh
(ii)   Vulnerability profile for the districts of Madhya Pradesh

The information regarding both these criteria has been taken from the draft report on "Madhya Pradesh State Climate Change Vulnerability Assessment" commissioned by Environmental Planning and Coordination Organization (EPCO), Bhopal.

Apart from the above two criteria, all the divisions in which the preparatory activities for GIM were undertaken have also been selected.

3.2.1.   Impacts of Climate Change on the Forests of Madhya Pradesh

A study -"Impact of climate change on Indian forests: a dynamic vegetation modeling approach" was published by IISC, Bangalore. In this study an assessment of the impact of projected climate change on forest ecosystems in Madhya Pradesh has been made using the global dynamic vegetation model IBIS and A1B Climate change scenario for the assessment period 2021-2050 for short term and 2071 – 2100 for long term. The dynamic vegetation model outputs show that during the short-term period of 2030s, out of the 4426 forested grids in Madhya Pradesh, 1000 (23%) will be impacted by climate

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change. Percentage of the forested grids projected to be impacted by 2080s is higher to the tune of 48% (2131 grids). The distribution of forested grids projected to be impacted by climate change is presented in Figure 6 for 2030s and 2080s. Forested grids mainly in the northern and south western part of Madhya Pradesh are projected to be impacted by climate change during the short-term period (2030s) under A1B scenario. In the long-term period (2080s), in addition to the northern and south western parts, southern and eastern districts of Madhya Pradesh are also projected to be impacted. The forests in the central districts of the state are not likely to be impacted by the projected climate change even by 2080s.

The key forested districts projected to be impacted during 2030s are Shivpuri, West Nimar and Jhabua and forested districts projected to be impacted during 2080s are Sheopur, Gwalior and Jhabua. In the districts projected to be impacted by climate change, the future climate is not suitable for the existing forest types and the species present. The forests in the grids projected to be impacted could experience tip drying, changes in physiological and phenological characters and in extreme cases die-back, leading to mortality of the tree species.
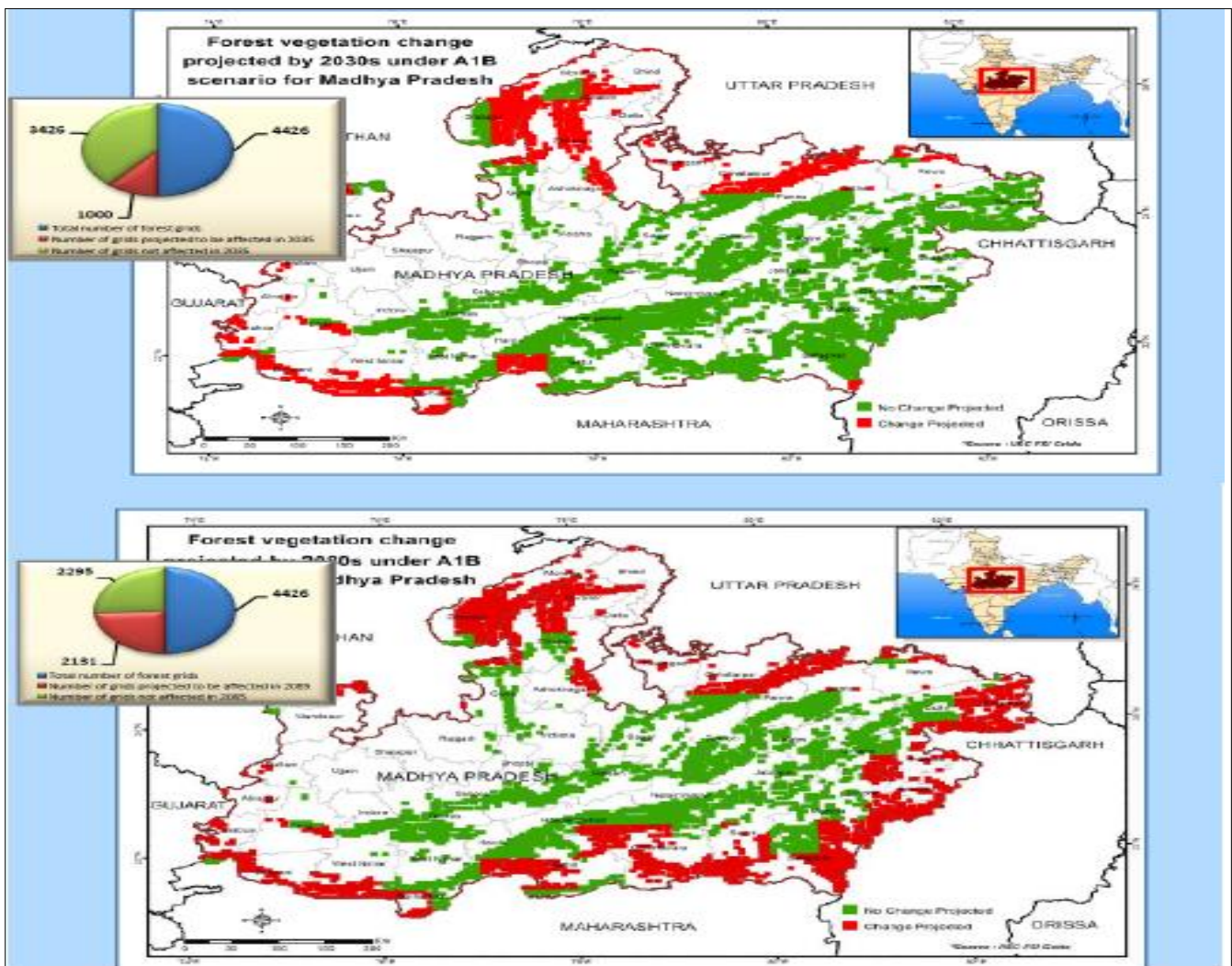
Figure 6: Forest Vegetation change projected by 2030s & 2080s under AIB scenario for Madhya Pradesh.

(a) Forested districts projected to be impacted during 2030s (short term) Change in forest vegetation of 20 districts of Madhya Pradesh is projected as per A1B scenario. The districts showing change in forest vegetation by 2030 are Sheopur, Badwani, Ratlam, Shivpuri, Morena, Gwalior, Harda, Khandwa, Khargone, Burhanpur, Jhabua Alirajpur, Balaghat, Guna, Ashoknagar, Rewa, Satna, Dhar, Betul and Panna.

(b) Forested districts projected to be impacted during 2080s (long term), Change in forest vegetation of 24 districts of Madhya Pradesh is projected as per A1B scenario. The districts showing change in forest vegetation by 2080 are Sheopur, Shivpuri, Morena, Dhar Jhabua Alirajpur Mandsaur, Neemuch, Seoni, Balaghat, Chindwara, Shahdol, Anuppur, Sidhi, Singrauli, Hoshangabad, Harda, Betul, Umaria, Khandwa, Khargone and Burhanpur, Gwalior and Tikamgarh.

3.2.2   Vulnerability Profile for districts of Madhya Pradesh

In its study "Madhya Pradesh State Climate Change Vulnerability Assessment", EPCO, Bhopal has developed a vulnerability profile for all the districts of Madhya Pradesh. For this, a Composite Vulnerability Index has been developed, which takes into account various indicators such as social, economic, agriculture, forest, water resources, climate and health. The table below classifies the different districts of Madhya Pradesh based on the Composite Vulnerability Index into four categories of projected vulnerability to climate change viz. Very High, High, Moderate and Low.

Scenarios	Projected Vulnerability in Districts of Madhya Pradesh			
	Very High	High	Moderate	Low
Baseline	Sidhi, Singrauli, Annuppur, Umaria, Shahdol, Dindori, Panna, Tikamgarh, Morena, Bhind, Ashoknagar, Alirajpur(12)	Satna, Rewa, Katni, Chhatarpur, Sagar, Damoh, Sheopur, Shivpuri, Datia, Guna, Mandsaur, Ratlam, Badwani, Dhar, Jhabua, Rajgarh, Shajapur, Sehore, Vidisha (19)	Seoni, Betul, Chindwara, Harda, Narsinghpur, Jabalpur, Khandwa, Burhanpur, Ujjain, Neemuch Khargone, Dewas, Raisen (13)	Hoshangabad, Indore Gwalior, Bhopal (4)
Mid-Century	Sidhi, Singrauli, Annuppur, Umaria, Shahdol, Dindori, Panna, Tikamgarh, Morena, Bhind, Ashoknagar, Alirajpur, Mandla and Rajgarh (14)	Satna, Rewa, Katni, Chhatarpur, Sagar, Damoh, Sheopur, Shivpuri, Datia, Guna, Mandsaur, Ratlam, Badwani, Dhar, Jhabua, Rajgarh, Shajapur, Sehore, Vidisha, Seoni Chindwara, Betul Narsinghpur, Burhanpur, Ujjain (25)	Harda, Jabalpur, Khandwa, Neemuch Khargone, Dewas, Raisen (7)	Hoshangabad, Indore Gwalior, Bhopal (4)
End Century	Sidhi, Singrauli, Annuppur, Umaria, Shahdol, Dindori, Panna, Tikamgarh, Morena, Bhind, Ashoknagar, Alirajpur, Mandla, Rajgarh and Chhatarpur (15)	Satna, Rewa, Katni, Sagar, Damoh, Sheopur, Shivpuri, Datia, Guna, Mandsaur, Ratlam, Badwani, Dhar, Jhabua, Rajgarh, Shajapur, Sehore, Vidisha, Seoni Chindwara, Betul Narsinghpur, Burhanpur , Ujjain (24)	Harda, Jabalpur, Khandwa, Neemuch Khargone, Dewas, Raisen (7)	Hoshangabad, Indore Gwalior, Bhopal (4)

Each district has also been given a rank based on the Composite Vulnerable Index. A lower rank denotes low vulnerability, while a higher rank denotes high vulnerability.
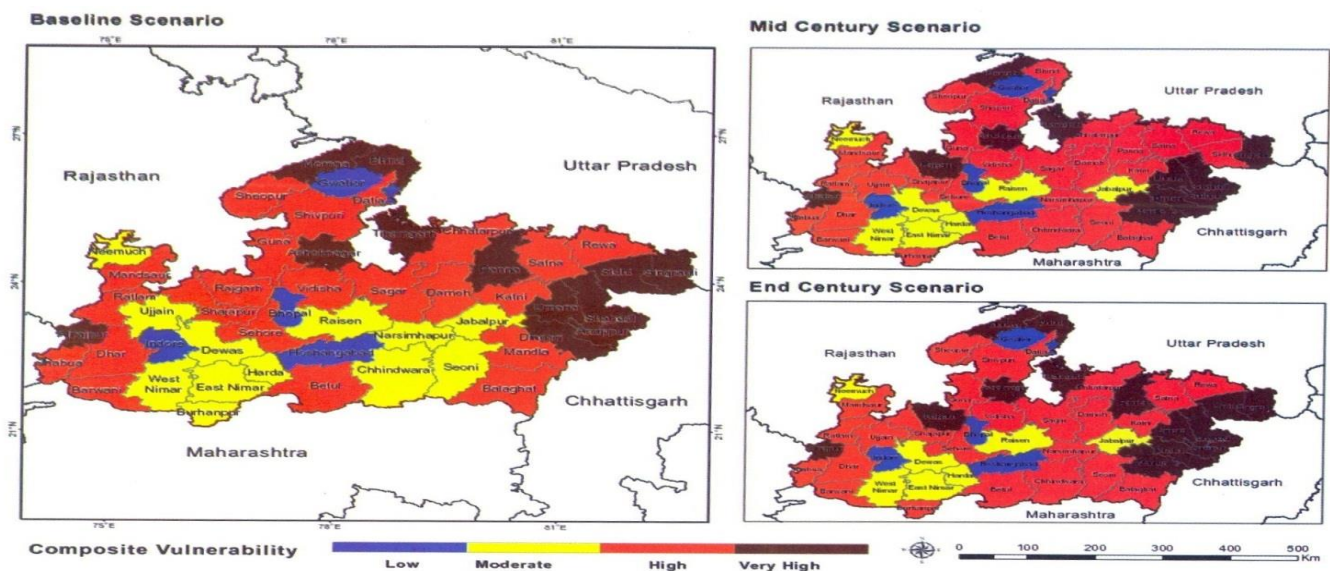
Figure: 7 Composite Vulnerability map showing low, moderate, high and very high cluster of districts in M.P.

3.2.3 L2 landscape division selected for project implementation

Impact of climate change on forests of Madhya Pradesh and vulnerability profile of forests of Madhya Pradesh form two very sound criteria for selection of landscapes for Green India Mission. Based upon these two criteria, 18 forest divisions have been shortlisted for implementing activities under GIM.

L1 Landscape	Name	L2 Divisions selected
Landscape (i)	Kymore plateau	1. Satna
Landscape (ii)	Northern Hills Plains	2. Umaria
		3. S. Balaghat
Landscape (iii)	Satpura- Narmada	4. Hoshangabad
		5. South Seoni
		6. North Betul
		7. W. Betul
Landscape (iv)	Vindhya Plateau	8. Raisen
		9. Obedullaganj
		10. Sehore
Landscape (v)	Malwa Plateau	11. Dhar
Landscape (vi)	Nimar- Jhabua Hills	12. Jhabua
		13. Badwani
		14. Sendhwa
Landscape (vii)	Bundelkhand	15. South Sagar
		16. S. Panna
Landscape (viii)	Gird	17. Sheopur
		18. Shivpuri

Within each selected division "watershed" has been taken as unit for selection of L2 (operational unit) & L3 (working unit) landscapes.

3.2.4   L2 Landscapes selected in each division

Based on ecological importance total 122 milli -watersheds have been selected as L2 Landscapes in above 18 forest division. Division wise summary of L2 selected is given below:-

Sr. No.	Division	No. of milliwatershed (L2) selected	Area in Ha
1	Satna	4	33343.09
2	Umaria	4	31919.78
3	S. Balaghat	12	74703.37
4	Hoshangabad	5	33355.73
5	South Seoni	11	75028.4
6	North Betul	4	27860.36
7	W. Betul	8	29083.2
8	Raisen	10	51000.26
9	Obedullaganj	10	51350.07
10	Sehore	5	27224.82
11	Dhar	3	10794.95
12	Jhabua	3	20596.94
13	Badwani	3	18218.11
14	Sendhwa	2	11708.77
15	South Sagar	13	71378.77
16	S. Panna	9	68068.78
17	Sheopur	8	50343.13
18	Shivpuri	8	49501
	Total	122	735479.53

Thus 122 milli watersheds have been taken as operational unit for Green India Mission implementation.

3.2.5. Selection of L3 Landscapes

As described in Para 3.2.4 milli watersheds have been selected as L2 Landscapes which form the operational unit of Green India Mission. Each milli watershed comprises of various micro watersheds. To achieve better results it is important that all these microwatersheds are taken up for treatment so that the whole milli watershed is treated. Keeping this in account all the micro watersheds in selected milli watershed have been chosen as L3 Landscapes or working units for Green India Mission. Thus all the microwatersheds in a milliwatershed selected have been taken up for treatment.

The division wise summary of selected L3 is given below:-

Sr. No.	Division	No. of milliwatersheds (L2) selected	No. of mcrowatersheds (L3) selected	Area in Ha
1	Satna	4	28	33343.09
2	Umaria	4	24	31919.78
3	S. Balaghat	12	71	74703.37
4	Hoshangabad	5	30	33355.73
5	South Seoni	11	67	75028.4
6	North Betul	4	20	27860.36
7	W. Betul	8	24	29083.2
8	Raisen	10	67	51000.26
9	Obedullaganj	10	57	51350.07
10	Sehore	5	28	27224.82
11	Dhar	3	18	10794.95
12	Jhabua	3	20	20596.94
13	Badwani	3	21	18218.11
14	Sendhwa	2	11	11708.77
15	South Sagar	13	79	71378.77
16	S. Panna	9	64	68068.78
17	Sheopur	8	48	50343.13
18	Shivpuri	8	58	49501
	Total	122	735	735479.53

Thus 735 micro- watersheds have been taken as working unit for Green India Mission implementation.

Chapter-4

Proposed Plan

4.1   Landscape identification

As has been described in chapter-3 that for the purpose of implementation of Green India Mission in Madhya Pradesh, eight L1 Landscapes have been identified in which total 18 forest divisions covering 15 districts have been selected. In these 18 divisions 122 milliwatersheds have been selected as L2 Landscapes (operational units) and 735 microwatersheds in these L2 Landscapes have been selected as L3 Landscapes (working units) with the help of Geographical Information System (GIS) area of these working units have been calculated and the description of different level landscapes is given below:-

L1 Landscape	Name	L2 Divisions	No. of milliwatersheds as L2 Landscape	No. of microwatersheds as L3 Landscape	Area (Ha)
Landscape (i)	Kymore plateau	Satna	4	28	33343.09
Landscape (ii)	Northern Hills Plains	Umaria	4	24	31919.78
		S. Balaghat	12	71	74703.37
Landscape (iii)	Satpura-Narmada	Hoshangabad	5	30	33355.73
		South Seoni	11	67	75028.4
		North Betul	4	20	27860.36
		W. Betul	8	24	29083.2
Landscape (iv)	Vindhya Plateau	Raisen	10	67	51000.26
		Obedullaganj	10	57	51350.07
		Sehore	5	28	27224.82
Landscape (v)	Malwa Plateau	Dhar	3	18	10794.95
Landscape (vi)	Nimar-Jhabua Hills	Jhabua	3	20	20596.94
		Badwani	3	21	18218.11
		Sendhwa	2	11	11708.77
Landscape (vii)	Bundelkhand	South Sagar	13	79	71378.77
		S. Panna	9	64	68068.78
Landscape (viii)	Gird	Sheopur	8	48	50343.13
		Shivpuri	8	58	49501
Total			**122**	**735**	**735479.53**

4.2 Use of GIS technique in preparation of perspective plan

For Green India Mission micro-watersheds are to be taken as working units. For the planning of treatment of these working units, it is of paramount importance to know the forest area and non forest area lying in these working units. It is a tedious task, since both watershed and forest maps are different and held by different agencies of the state government and more over watersheds are not marked on the ground. To overcome this problem help of Geographical Information System (GIS) technique was taken. The georeferenced digital data of watersheds was obtained from Madhya Pradesh Council of Science & Technology. Madhya Pradesh forest department is pioneer in digitizing forest maps. So the geographical digital data of forest maps is already available with the department. This data not only shows the forest boundaries but also the density, age, site quality and forest type of the forest resource. After superimposing digital data of watershed over the digital data layer of forest maps, we were able to obtain the forest and non forest area available in each of the micro watersheds. Not only this, the forest compartment wise resource description of each of the micro watershed was also obtained. This data along with the information collected from the field was used in preparation of the perspective plan.

4.3 Submission wise area included in perspective plan:-

GIM has envisaged 5 submissions for execution of the plan. These are:-

Sr. No.	Submission
1.	Enhancing quality of forest cover and improving ecosystem services
2.	Ecosystem restoration and increase in forest cover
3.	Enhancing tree cover in Urban and Peri Urban areas (including Institutional lands)
4.	Agroforestry and Social forestry (increasing biomass and creating carbon sink)
5.	Restoration of wetlands

Based on the nature of the forest and non forest land available in a micro watershed various activities have been proposed under different submissions so that the micro watershed is treated properly.

The submission wise area taken up for treatment is as follows:-

(Area in ha.)

S. No	Submission	Total
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	142835
2.	Submission 1 (b) Type A Ecorestoration of degraded open forest with plenty of root stocks	60191
3.	Submission 1 (b) Type B Ecorestoration of degraded open forest with limited root stocks and open blanks	19620
4.	Submission 1 (b) Type C Ecorestoration of degraded open forest of largely open areas with sparse undergrowth	17789
5.	Submission 1 (c) Restoration of grasslands	25562
6.	Submission 2 (f) Restoration of abandoned mining area	635
7.	Submission 3(a) Plantation in urban and peri urban areas	406
8.	Submission 4(a) Agroforestry and social forestry in farmer's land including current fallows	59827
9.	Submission 4(b) Agroforestry and social forestry in Shelterbelt plantation	343
10.	Submission 4 (c) Agroforestry and social forestry in Highway/Rural roads/canals/Tank Bunds	13142
11.	Submission 5 Restoration of wetlands	350
Total		**340700**

Thus 340700 ha. area has been included in the perspective plan which has been prepared for the year 2016-17 to 2020-21. In the first three year new area will be taken up for creation along with the maintenance from the second year, while in the last two years only the maintenance of the asset thus created shall be done. Area to be treated in the State under GIM is given in Annexure "A".

4.4 Budgetery provision for the Perspective Plan

In the Implementation Guideline for GIM interventions, submission wise unit cost norm have been calculated taking into account the wage rate as per Rs.100 where as the prevailing wage rate in the state are much more than this. Implementation Guidelines also provide that states are free to upscale the rates based on their prevailing and notified wage rates. Accordingly the budget for perspective plan has been prepared on the basis of prevailing wage rate i.e.Rs.264/- in the first year and there after with an increase of 10% every year.

Based on these norms the total budget provision for the perspective plan is as follows:-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	28292.58	1094.5	10285.48	39672.58
2017-18	57348.65	905.06	20388.80	78642.50
2018-19	70301.41	744.15	24865.95	95911.51
2019-20	47768.18	587	16924.32	65279.50
2020-21	23596.16	437.38	8411.74	32445.28
Total	**227306.98**	**3768.11**	**80876.28**	**311951.37**

Budgetary provisions for the State is given in Annexure "A".

4.5 Landscapewise area to be treated and budgetery provisions:-

L1 Landscape	Name	L2 Divisions	Area to be treated (ha.)	Budget Provision(in Rs. Lakhs)
Landscape (i)	Kymore plateau	Satna	17453	16534.38
Landscape (ii)	Northern Hills Plains	Umaria	48706	40195.22
		S. Balaghat		
Landscape (iii)	Satpura- Narmada	Hoshangabad	74132	57859.27
		South Seoni		
		North Betul		
		W. Betul		
Landscape (iv)	Vindhya Plateau	Raisen	65613	50447.17
		Obedullaganj		
		Sehore		
Landscape (v)	Malwa Plateau	Dhar	6236	6509.43
Landscape (vi)	Nimar- Jhabua Hills	Jhabua	17315	21959.57
		Badwani		
		Sendhwa		
Landscape (vii)	Bundelkhand	South Sagar	51906	54157.65
		S. Panna		
Landscape viii)	Gird	Sheopur	59339	64288.68
		Shivpuri		
Total			**340700**	**311951.37**

Lanscape wise detail of area to be treated and proposed budget is given in Annexure "B" to Annexure "I".

District wiese landscape plan is given in chapter 5.

CHAPTER -5

5.1 Landscape plan for District Satna

Satna district lies in the Vindhyachal mountain range and form a major part of upper vindhyan geological formation.
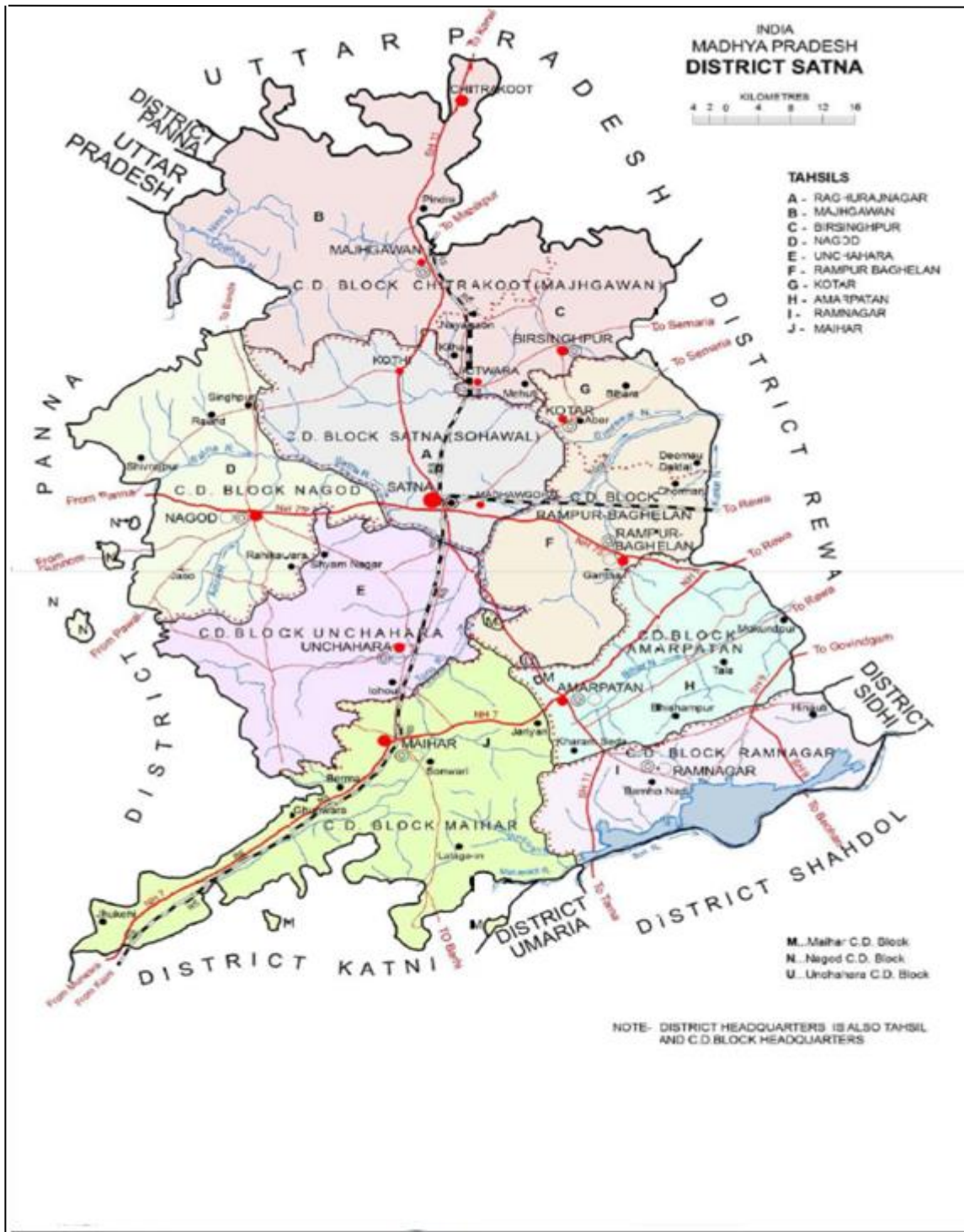
The altitude varies from 125 meter to 721 meter above mean sea level. Behind the slopes of the Vindhyachal Mountain lies large plain tracts along with lesser altitude hills and valleys. Son, Tamas and Satna are the major rivers that flow through the district. Satna district is falling under the Ganga basin area. The Yamuna, the Tons and the Son are Sub-basins of the Ganga basin, which are draining the area. Excepting small southern part, the district is mainly drained by river Tons and its tributaries.

Tons is perennial river, which flows in north and north-east direction. Its main tributaries are westerly flowing Seranji Nala, nort-easterly flowing Lilji Nala, Barua Nala and Beehar Nadi, northerly flowing Magardaha Nala, and easterly flowing Satna, Simrawal and Asrawal rivers. The "Paisuni or Mandakni" sacred river, which is tributary of the river Yamuna drains northern part of the district (Chitrakoot area). Southeast part of the district is drained by Son river and its tributaries. The district is also having industrial and mining importance as it is rich in limestone and Bauxite resources. Most of the limestone is used in manufacturing of cement and lime. Agriculture forms the major source of the income in the district. Soil type is predominantly red soil with black soil in patches, lateritic soil at hill tops and alluvial soil near rivers and tributaries. Irrigation facilities in Satna district is not well developed. Only 37 % of net sown area is irrigated and rest of the area is rain-fed. Canal irrigation is negligible. The average annual rainfall is around 1074 mm. The climate of Satna district is characterized by a hot summer with general dryness, except during the south-west monsoon season. Maximum temperature goes up to 48^0 c with minimum temperature up to 1.7^0 c during winters.

Terrain of the district is mostly plain and the hilly. Plains are used for agriculture purposes where as hills are predominantly occupied by Forest. The terrain is divided into five major formations-

1. Persamania Pathar
2. Satna -Rewa Pathar
3. Keymore hills
4. Son valley
5. North Vindhyan hills

In Satna district there is only one forest division , namely Satna forest division which has been selected for Green India Mission project.

5.1.1 Forest:

Forest of Satna division is mainly mixed forest with North Tropical Dry Deciduous Mixed forest type. Small patches of Teak and Sal forest are also present .Forest density varies from 0.2 to 0.7. The major species of the forest area are Salai, Moyan, Dhawda, Saja, Achar, Aonwla, Baheda, Chironji, Mahua, Tendu and Palash. The area description of the forest in the division is as follows:-

Reserved forest	Protected forest	Undemarcated area	Total (ha.)
27851.453	198687.537	162.705	226701.695

5.1.2 Wildlife:

Satna forests were once rich in wild life but due to biotic pressure over the period their number is now dwindling. Prominent species which still roam the area are leopard, spotted deer, sambhar, wild boar, sloth bear etc.

5.1.3 Dependence on forest:

There are 1984 revenue villages in the district out of which 814 villages are located within 5 km. radius of the forest. Large number of population is dependent on forest. According to working plans estimates about 17499 cmt. timber 126758 cmt of fuel wood and 5,10,003 pieces of bamboo are required every year to meet the basic need of the people living within 5 km radius of the forest. Most of the basic requirement of fuel, folder and timber is met through the forest. Thus a large number of populations are dependent on forest. Due to rich mineral belt, forests are subjected to illegal mining also.

Besides human population the forest of Satna division is subjected to great grazing pressure also. The cattle population of the district is about 1052556 which is equivalent to 1204010 cattle units. The grazing carrying capacity of forest of Satna district is only 337326 cattle units .Thus the grazing pressure in the district is far more than the carrying capacity of the forest of the district. Since most of the cattle are dependent on forest for their fodder requirement thereby exerting great grazing pressure on the forest.

5.1.4 Joint forest management:

Out of total 1984 villages in the district 814 villages are located within 5 km radius of the forest. To make these villages to actively participate in forest management, total 328 joint forest management committees have been constituted. Since most of the area of the division is understocked area, only village forest committees have been constituted. These Village Forest Committees cover an area of 1169.12 sq km of the forest.

5.1.5 Demography:-

Total area of the district		7502 sq.km.
Literacy rate		72.3%
No. of villages		1984
No. of households		476690
Population	Rural	1754517
	Urban	474418
	Total	2228935
Population	Male	1157495
	Female	1071440
	Total	2228935
Scheduled caste population		398569
Scheduled tribe population		319975

Scheduled Caste forms 17.88% and Scheduled Tribe forms 14.36% of the population of the district. 40.77% of the worker population i.e. 371584 person are agricultural laborers.

5.1.6 L-2 Landscapes selected in Satna District:-

Following 4 milli watersheds of Satna division have been selected as L2 landscapes:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2A7E6c	394.702	1253.452	883.801	2531.955	6253.821	8785.776
2.	2A7E6k	5277.083	2583.636	850.141	8710.86	1562.78	10273.64
3.	2A7E6q	0	467.352	1859.602	2326.954	4487.536	6814.49
4.	2A7E6r	0	14.973	1896.74	1911.713	5557.469	7469.182
Total		**5671.785**	**4319.413**	**5490.284**	**15481.48**	**17861.61**	**33343.09**

Thus the L 2 landscapes selected in Satna district have a total 33343.09 ha. of area .These 4 milli-watersheds are the operational units for implementation of GIM. Selected milli-watersheds possess forest as well as non forest area . These 4 milli-watersheds have 28 microwatersheds out of which 19 microwatersheds have forest as well as non forest area whereas remaining 09 microwatersheds are purely in non forest area .The forest area in the milli -watersheds is largely under stocked and blank forest , dense forest is over very little area. Only one milliwatershed is having substantial dense forest area which primarily moderately dense forest area requiring treatment.

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI
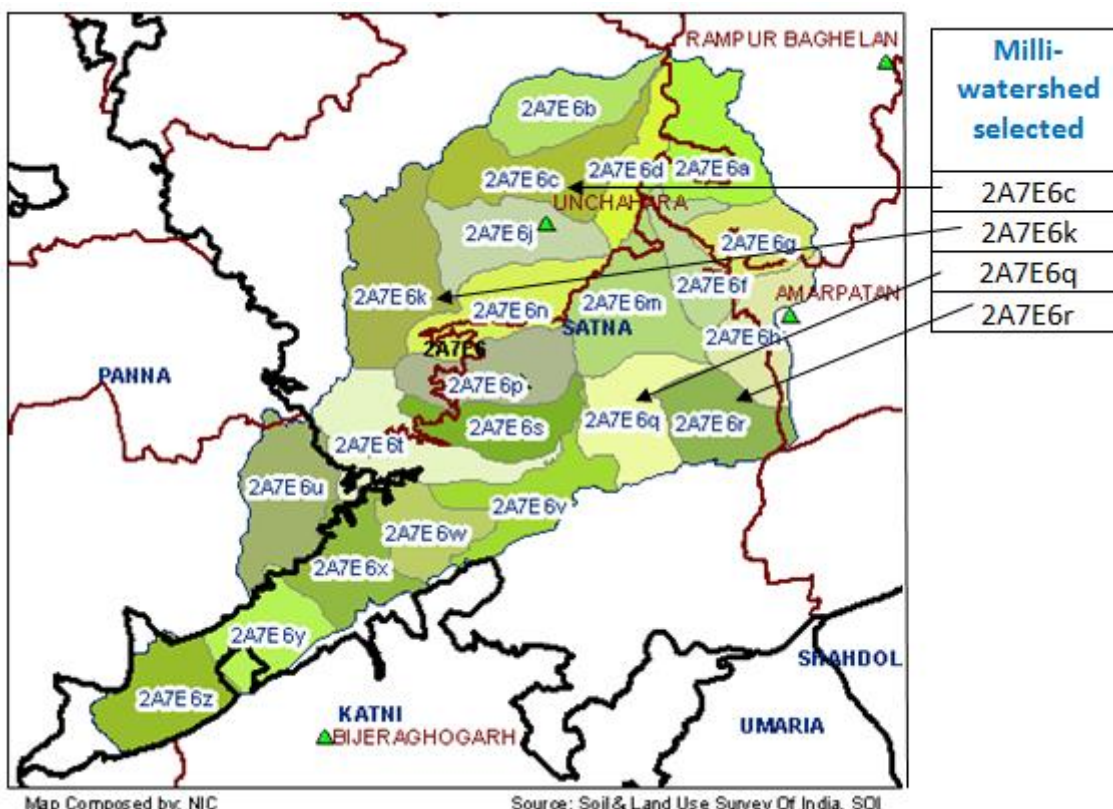
5.1.7 L3 landscapes selected in Satna Division.

The above 4 milli-watersheds selected as L2 landscapes have further been divided into total 28 micro-watersheds which are the working unit for the GIM. All the micro-watersheds of a particular

milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

5.1.7.1 Milli-watershed no. 2A7E6c:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2A7E6c1	0	0	90.353	90.353	675.402	765.755
2.	2A7E6c2	0	0	0	0	716.504	716.504
3.	2A7E6c3	0	0	73.053	73.053	854.396	927.449
4.	2A7E6c4	0	348.47	232.472	580.942	341.396	922.338
5.	2A7E6c5	1.532	304.274	145.208	451.014	409.247	860.261
6.	2A7E6c6	0	0	0	0	1003.031	1003.031
7.	2A7E6c7	0	0	0	0	1663.816	1663.816
8.	2A7E6c8	2.476	137.074	168.013	307.563	348.119	655.682
9.	2A7E6c9	390.694	463.634	174.702	1029.03	241.91	1270.94
Total		**394.702**	**1253.452**	**883.801**	**2531.955**	**6253.821**	**8785.776**

5.1.7.2 Milli-watershed no. 2A7E6k :-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2A7E6k1	284.858	735.834	55.217	1075.909	502.379	1578.288
2.	2A7E6k2	334.358	380.037	47.982	762.377	155.68	918.057
3.	2A7E6k3	345.343	229.19	65.043	639.576	123.328	762.904
4.	2A7E6k4	342.864	207.472	175.325	725.661	292.039	1017.7
5.	2A7E6k5	514.578	102.014	11.484	628.076	75.175	703.25
6.	2A7E6k6	941.716	258.321	210.657	1410.694	55.391	1466.085
7.	2A7E6k7	972.279	65.963	28.049	1066.291	41.457	1107.748
8.	2A7E6k8	1001.03	266.328	93.197	1360.555	28.129	1388.684
9.	2A7E6k9	540.057	338.477	163.187	1041.721	289.202	1330.923
Total		**5277.083**	**2583.636**	**850.141**	**8710.86**	**1562.78**	**10273.64**

5.1.7.3 Milli-watershed no. 2A7E6q:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2A7E6q1	0	0	0	0	1036.044	1036.044
2.	2A7E6q2	0	0	262.311	262.311	605.917	868.228
3.	2A7E6q3	0	0	206.023	206.023	339.946	545.969
4.	2A7E6q4	0	322.612	465.475	788.087	252.819	1040.906
5.	2A7E6q5	0	0	108.282	108.282	875.389	983.671
6.	2A7E6q6	0	0	0	0	968.356	968.356
7.	2A7E6q7	0	144.74	817.511	962.251	409.065	1371.316
Total		**0**	**467.352**	**1859.602**	**2326.954**	**4487.536**	**6814.49**

5.1.7.4 Milli-watershed no. 2A7E6r:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2A7E6r1	0	0	0	0	503.395	503.395
2.	2A7E6r2	0	0	559.546	559.546	672.426	1231.972
3.	2A7E6r3	0	0	0	0	530.777	530.777
4.	2A7E6r4	0	14.973	480.165	495.138	638.358	1133.496
5.	2A7E6r5	0	0	0	0	612.912	612.912
6.	2A7E6r6	0	0	587.527	587.527	660.866	1248.393
7.	2A7E6r7	0	0	269.502	269.502	696.604	966.106
8.	2A7E6r8	0	0	0	0	1242.131	1242.131
Total		**0**	**14.973**	**1896.74**	**1911.713**	**5557.469**	**7469.182**

5.1.8 Reason for selection of L2 landscapes:-

- Selected L2 are present in Kymore plateau, the landscapes supports a wide variety of flora. The floristic composition of vegetation of the area comprises of different species of trees, shrubs, herbs and grasses constituting different layers of habitat suitable for different faunal species. The rich habitat favours population of wild animals.

- Forest of Satna district contributes to the catchment area of Son, Tamas and Satna rivers that flow through the district and are part of the Ganga basin area

- Majority of tribal population, mainly Gonds, is dependent on Forest resources.

- Biodiversity rich area subject to degradation. Most of the forest area is understocked and subject to great biotic pressure. Selected area is degrading fast due to excessive biotic pressure. Degradation is leading to fragmentation of previously intact forest cover. The little dense area is also under severe pressure and require immediate attention.

- The plan area is susceptible to the fire for a great extent every year from month of February to middle June during Mahua flowers collection by the villagers and forest dwellers.

- Anthropogenic activities- Illegal tree felling and encroachment are main human caused damages in addition to local traditional practices of minor forest produce collection by the villagers in non sustainable manner. Due to rich mineral belt forests are subjected to illegal mining also.

- Excessive grazing pressure is affecting natural regeneration in the forest.

5.1.9 Possible solutions to enhance forest cover, improve ecosystem services and address the drivers of degradations:-

- Plantation activities will be taken up in the degraded and under stocked forest area apart from soil and moisture conservation work in these areas to improve the area under forest cover.

- Moderately dense forests will be treated and protected so as to improve the quality and productivity of the forests.

- Grazing will be regulated and native fodder species would be planted so as to reduce the biotic pressure on the forests.

- Agro-forestry activities shall be taken up in 5465 Ha. non forest area so as to reduce burden on the forest land.

- Livelihood activities for the local communities will be taken up.

- Use of alternative energy sources like solar lighting, biogas, etc. would be encouraged among the villagers so as to reduce their dependency on forests for fuel wood.

5.1.10 Proposed interventions:-

- Strengthening of Forest Establishment and JFMCs by organizing JFMC level and Division level workshops, training and awareness generation programs. Training will be provided to field staff and members on PRA micro-planning, watch and ward activities on establishing convergence.

- Capacity building of JFMC members. Young and educated youth will be selected from JFMCs and they will be trained in account keeping and forest management aspects so that they act as community foresters. These community foresters will assist the forest staff in implementation of Green India Mission activities.

- Protection and maintenance activities-The maintenance and protection of existing forest cover is as much important as the encouraging new plantation and treatment of degraded area. JFMC members shall be trained in protection and management activities so that they provide timely help to the forest staff in managing these activities. Fire protection measures shall be taken up.

5.1.11 Cross cutting interventions proposed:-

To reduce the consumption of forest produce fuel-wood efficient devices shall be introduced and measures shall be taken up to promote alternative energy sources. Distribution of fuel wood efficient devices, promotion of solar devices, Bio-gas plants depending on the need will be facilitated in the selected area.

5.1.12 Livelihood improvement activities proposed:-

Assistance shall be provided in livelihood improvement activities like Dairy farming , Poultry farming ,NTFP based livelihood activities .Various trainings including training on non destructive harvesting of minor forest produce shall be provided.

5.1.13 **Area proposed to be treated** :-

Under different submissions of Green India Mission, following area is proposed to be treated in Satna District:-

S. No	Submission	Area to be treated (Ha)					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	1775	1775	1775	0	0	5325
2.	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	1315	1275	1225	0	0	3815
3.	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	100	50	30	0	0	180
4.	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	510	510	515	0	0	1535
5.	Submission 2 (f) Restoration of abandoned mining area	50	40	25	0	0	115
6.	Submission 3(a) Plantation in urban and peri urban areas	20	15	8	0	0	43
7.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	1830	1830	1805	0	0	5465
8.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	325	325	325	0	0	975
	Total	**5925**	**5820**	**5708**	**0**	**0**	**17453**

Since the dense forest is under severe pressure, special emphasis has been given to Submission 1 (a) moderately dense forest cover, but showing degradation. To reduce the pressure on forest about 5465 ha. area is proposed to be brought under agro-forestry. There are certain abandoned mining area in the division for which a provision has been made to take up reclamation of 115 ha. area of abandoned mines.

5.1.14 **Budget for Satna district:-**

Submission wise budget summary for Satna district is given below-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	1504.96	6.105	528.87	2039.94
2017-18	3061.69	6.105	1073.73	4141.53
2018-19	3792.67	6.93	1329.86	5129.46
2019-20	2442.20	5.775	856.79	3304.77
2020-21	1272.86	5.445	447.41	1725.71
Total	**12074.38**	**30.36**	**4236.66**	**16341.39**

Details of budget for Satna Division is given in given Annexure i.

5.2 Landscape Plan Umaria District

Umaria district lies in eastern part of Madhya Pradesh. The district lies between north latitudes 23° 05' and 24° 20' and east longitudes 80° 40' and 81° 17'.
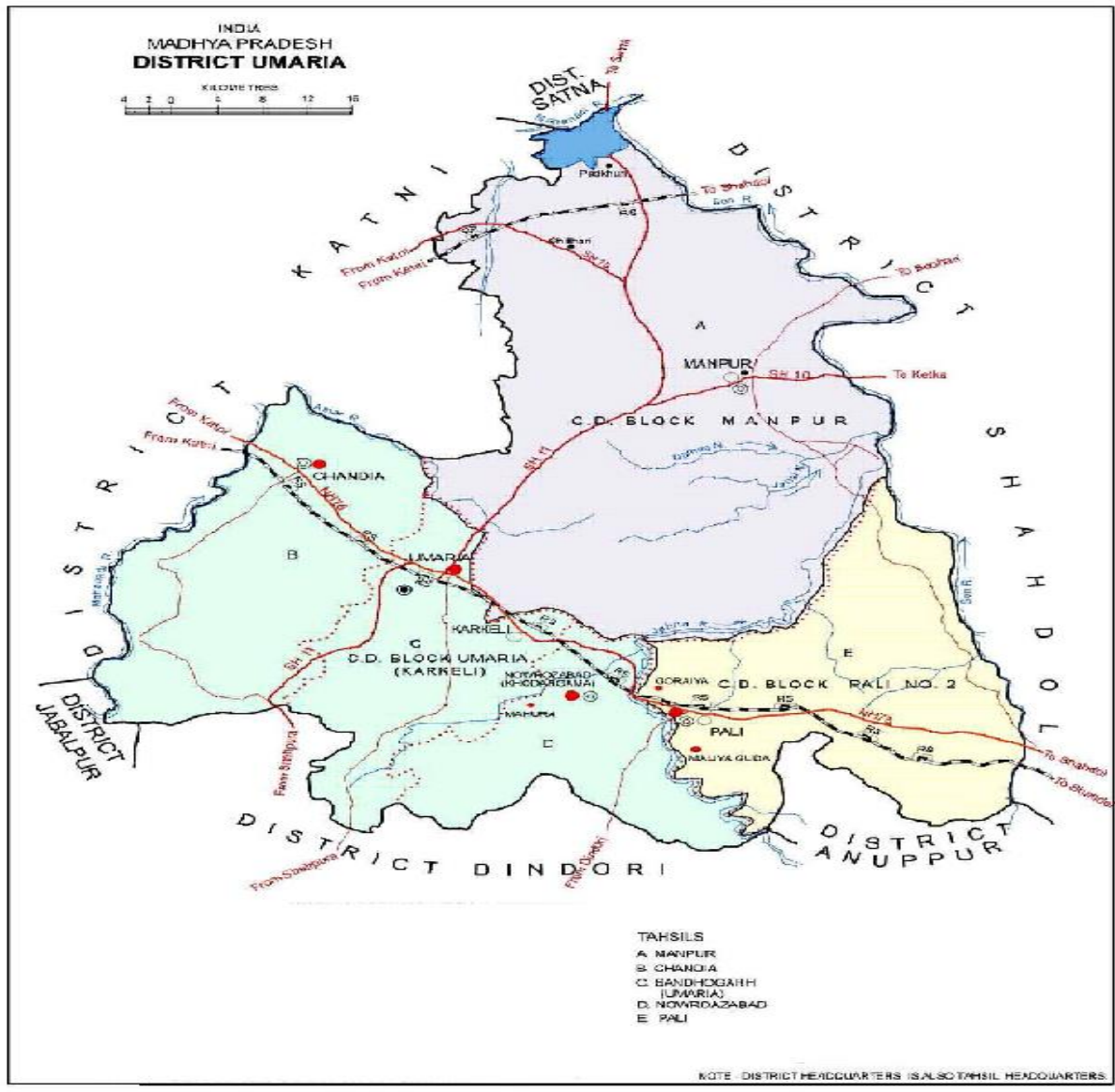
Umaria district is one of the newly formed district of Vindhyan region. Umaria district is full of natural resources. About 52 % of the area is covered with forest and it is abundant in mineral resources also. The most important mineral found in the district is coal and as a result 8 mines are being operated by South Eastern Coalfield Limited in the district. Coal based power plant is also located at Pali-Birsinghpur in the district having 840 Mega Watt Power Generation capacity.

The entire Umariya district is falling under Son sub basin area of the Ganga basin. The main river of the district is the Son which flows from south -west to north- east direction and forming district boundary between Shahdol and Umariya district. The Son or Survarna means the gold, is one of the biggest tributary of the river Ganga, and it is considered as sacred river. The river Son originates from Son kund from Amarkantak plateau, located in Anuppur district of Madhya Pradesh. Rivers Johila and Chhoti Mahanadi are main tributaries of Son river in Umariya district. The Johila which is the most important tributary of the Son in the Umariya district also originates from Amarkantak plateau

(Maikhal range) in Anuppur district and flows to north East direction up to Pali and turns to the north until it meets the Son. The Chhoti Mahanadi is also important tributary of the river Son and it is forming western boundary between Umariya and Katni districts and it merges with Son on northern part of the district. Chhoti Mahanadi originates from Tordara from Satpura hills of Dindori district. Important tributary of Chhoti-Mahanadi river in Umariya district is Umrar river which drain north central part of the area, and flows in north west direction and joins Chhoti Mahanadi river near village Pipariya-kalan in Katni district. Thus Umaria division possesses two confluences of major rivers. The first one is confluence of son and Johila river and other one is confluence of Chhoti Mahanadi, Bhadar and Son River. These areas make the extensive river valley area in the division.

The Climate of this district is characterized by a hot summer and general dryness, except during southwest monsoon season. Average daily temperature varies from 8.50^0 c in winter to 41.26^0 c in summer. The average annual rainfall of Umaria district is about 1248.8 mm. The main soil type is black soil, red soil, sandy and alluvial soil. The altitude in the district varies from 375 meter above mean sea level to 1075 meter above mean sea level. The terrain can be divided into hilly area, river valley area and plain. The mountain ranges of Maikal hills form the southern part of the district.

In Umaria district there is Umaria territorial forest division, Bandhavgarh National Park and Forest Development Corporation Division out of which Umaria forest division has been selected for Green India Mission.

5.2.1 Forest:-

The geographical area of Umaria district is 4076 sq. km. out of which 2325 sq. km. is forest area which means 57.04% of the geographical area of the district is under forest. Various administrative unit wise distribution of forest area in the district is as follows:-

S. No.	Administrative unit	Area(sq. km)
1.	Umaria forest division	1413
2.	Bandhavgarh Tiger Reserve	409
3.	Panpatha Sanctuary	246
4.	Forest Dev. Corporation	257
Total		**2325**

It is evident from above figure that Umaria district is rich in biodiversity and Umaria forest division constitutes the major portion of this bio diversity. Forests of Umaria division are mainly Tropical Mixed Dry Deciduous and Tropical Dry Teak forest. The major forest type is Teak, Sal and Mixed forest. The main species of the forest are Teak, Sal, Saja, Tendu, Baheda, Bamboo, Dhawada, Mahua, Aonwla, Achar, Palash, etc. Forest density varies from 0.4 t 0.8.

The area wise distribution of forest in Umaria Division is as given below:-

Reserved forest	Protected forest	Total (ha.)
84193.76	57106.99	141300.75

5.2.2 <u>Wild life</u>:-

The district has extensive forests. Umaria forest division possesses very good dense forest which is home to variety of wild animals. The famous Bandhavgarh Tiger Reserve is also located in Umaria District. The main animal species found in the forest area are Tiger, Leopard, Hyena, Wolf, Jackal, Spotted Deer, Neelgai, Chinkara and Sloth bear etc.

5.2.3 <u>Dependence on forest:-</u>

Umaria district is basically a forest dominant district where 57% of the geographical area of the district is under forest. Thus a large number of population depends on forest for their basic needs. There are 594 revenue villages in the district out of which 589 villages are located within 5 km. radius of the forest. This is a clear indication of the deep relationship of the people of the district with forest. About 82% of the population lives in rural area which is dependent on forest to meet their basic requirement of fuel, fodder and small timber.

The cattle population of the district is about 356795 which makes 361971 cattle units whereas the grazing carrying capacity of Umaria forest division is only 148308 cattle units. The practice of stall feeding is not prominent in the district and most of the cattle depend on forest to meet their fodder requirement. Thus there is great grazing pressure on the forest of Umaria forest division. As per working plan estimate a total 22500 cmt. Timber, 248093cmt fuel wood and 1773319 pieces of bamboo are required to meet the annual demand of the district. People depend on forest to meet this demand.This describes the tremendous pressure being faced by the forests of the Umaria district.

5.2.4 <u>Joint Forest Management</u>:-

Almost all the revenue villages in the district are located in the periphery of 5 km. from forest boundary. The activities of these villages have a major impact on the forest. To seek active participation of these villages 267 forest committees have been constituted in the division out of which 120 are village forest committees, 86 are forest protection committees and 61 are eco development committees. Eco development committees have been constituted in the villages near protected areas. Total 1283 sq. km. of the division has been brought under joint forest management.

5.2.5 <u>Demography:-</u>
As per2011 the census data of the district are as follows:-

Total area of the district		4076 sq.km.
Literacy rate		65.9%
No. of villages		594
No. of households		144594
Population	Rural	534214
	Urban	110544
	Total	644758
Population	Male	330674
	Female	314084
	Total	644758
Scheduled caste population		58147
Scheduled tribe population		300687

The Scheduled caste form 9.02 % and the Scheduled tribes form 46.64 % of the total population .Main tribes are Gond, Kaul and Maria. 50.29 % of the worker population i.e. 145690 people work as agricultural laborers.

5.2.6   L-2 Landscapes selected in Umaria District:-

Following 04 milli-watersheds of Umaria division have been selected as L2 landscapes:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2A6H4d	9175.801	391.624	85.978	9653.403	1737.698	11391.1
2.	2A6H4u	297.376	724.626	580.537	1602.539	5152.576	6755.115
3.	2A6H6f	3808.71	587.436	95.248	4491.394	1460.068	5951.462
4.	2A6H6g	4140.899	990.469	698.897	5830.265	1991.837	7822.102
Total		17422.79	2694.16	1460.7	21577.6	10342.18	31919.78

Thus these 4 L2 landscapes have a total area of 31919.78 ha. Since Umaria division possesses very good forest, the largest part of the area selected is moderately dense forest. These 4 milli-watersheds are the operational units for implementation of GIM. Selected milliwatersheds possess forest as well as non forest area. These 4 milliwatersheds have 24 microwatersheds out of which all the 24 microwatersheds have forest as well as non forest area. The forest area in the milli -watersheds is largely moderately dense forest.

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI
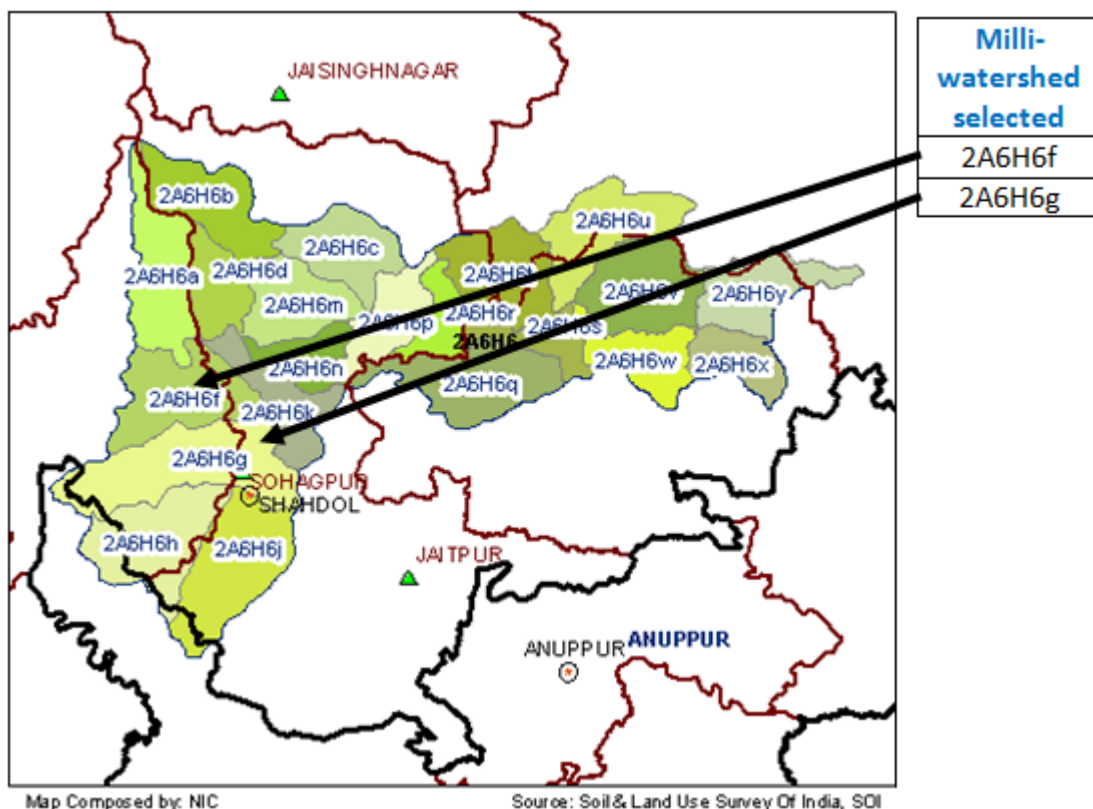
5.2.7   L3 landscapes selected in Umaria District:-

The 4 milli-watersheds selected as L2 landscapes comprises of 24 micro-watersheds which are the working unit of the GIM. Most of the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is properly treated. The milli-watershed wise description of these micro-watersheds is as follows:-

5.2.7.1 Milli-watershed no. 2A6H4d:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2A6H4d1	661.124	23.347	11.117	695.588	74.744	770.332
2.	2A6H4d2	1105.435	9.861	27.734	1143.03	635.189	1778.219
3.	2A6H4d3	1050.453	49.883	6.592	1106.928	56.647	1163.575
4.	2A6H4d4	1450.64	41.962	0	1492.602	24.886	1517.488
5.	2A6H4d5	1188.499	36.775	0	1225.274	24.303	1249.577
6.	2A6H4d6	823.509	36.663	0.139	860.311	85.056	945.367
7.	2A6H4d7	1713.501	116.006	0	1829.507	7.401	1836.908
8.	2A6H4d8	1182.64	77.127	40.396	1300.163	829.472	2129.635
Total		9175.801	391.624	85.978	9653.403	1737.698	11391.1

5.2.7.2 Milli-watershed no. 2A6H4u:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2A6H4u1	0	20.981	11.334	32.315	978.062	1010.377
2.	2A6H4u2	0	93.04	276.945	369.985	640.352	1010.337
3.	2A6H4u3	0	92.623	169.204	261.827	1160.354	1422.181
4.	2A6H4u4	280.919	382.867	22.975	686.761	1539.944	2226.705
5.	2A6H4u5	16.457	135.115	100.079	251.651	833.864	1085.515
Total		**297.376**	**724.626**	**580.537**	**1602.539**	**5152.576**	**6755.115**

5.2.7.3 Milli-watershed no. 2A6H6f:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2A6H6f3	307.2	79.42	0.171	386.791	722.38	1109.171
2.	2A6H6f4	1410.793	76.638	1.174	1488.605	237.448	1726.053
3.	2A6H6f6	986.156	78.542	92.91	1157.608	294.48	1452.088
4.	2A6H6f7	1104.561	352.836	0.993	1458.39	205.76	1664.15
Total		**3808.71**	**587.436**	**95.248**	**4491.394**	**1460.068**	**5951.462**

5.2.7.4 Milli-watershed no. 2A6H6g:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2A6H6g1	462.035	159.538	21.36	642.933	79.272	722.205
2.	2A6H6g2	126.097	404.489	110.047	640.633	419.811	1060.444
3.	2A6H6g3	1331.455	55.58	137.054	1524.089	433.106	1957.195
4.	2A6H6g4	1169.315	113.092	178.097	1460.504	386.234	1846.738
5.	2A6H6g5	908.893	89.452	209.572	1207.917	438.857	1646.774
6.	2A6H6g6	143.104	8.993	8.394	160.491	8.592	169.083
7.	2A6H6g7	0	159.325	34.373	193.698	225.965	419.663
Total		**4140.899**	**990.469**	**698.897**	**5830.265**	**1991.837**	**7822.102**

5.2.8 Reason for selection of L2 landscapes:-

-The area is ecologically important area and falls in the catchment area of perennial rivers Son, Johila and Mahanadi.

- Scheduled area with dominant tribal population.

- Landscape is biodiversity rich area - The area contains endangered plant as well as animal species.

- A large number of the population in the landscape is living below poverty line. The livelihood opportunities are less. There are no industries working in the area. The level of dependence on forest is high. Dependency on forest is very high leading to heavy biotic pressure on the forest land.

- Income from Agriculture is meager. The percentage of irrigated crop area is very small.

- The area falls in the wild life corridor between Kanha and Bandhavgarh Tiger Reserve and needs to be protected for the sustenance of the corridor.

- Most of the forests are moderately dense forests which require assistance in natural regeneration.

5.2.9 Possible solutions to enhance forest cover, improve ecosystem services   and address the drivers of degradations:-

-Effective management to combat biotic pressure - It will be achieved through efficient fire management, regularizing the grazing and control on illicit felling

- Enhancement of quality and productivity of forest cover by treatment of 16560 ha. of forest land and 2075 ha. of non forest land thereby enhancing fodder, fuel wood, bamboo, small timber and NTFP production.

- Soil and water conservation - It will be achieved through watershed treatment methodology involving construction of small SWC structures.

- Reduction in the degree of dependence on forest- It will be achieved through promotion of alternate energy resources such as biogas, solar devices and LPG.Use of fuel efficient devices would be encouraged.

- Livelihood opportunities -Various livelihood activities such as Dairy Farming, NTFP based livelihoods, Poultry farming, Dona pattal manufacturing and Fisheries will be taken up in the project area villages. There is a great scope in the field of eco tourism also which would be explored.

5.2.10 Proposed interventions:-

- Capacity building of Forest department and JFMCs – By organizing JFMC level and Division level workshops and training program and awareness generation on GIM. Training will be provided to field staff and members on PRA, micro-planning, watch and ward activities, livelihood generation and on establishing convergence.

- Young and educated youth will be selected from JFMCs as Community forester and will be trained in account keeping and forest management aspects. These community foresters will assist the forest staff in implementation of mission activities.

-Protection and maintenance activities- The maintenance and protection of existing forest cover are as much important as encouraging the new plantation and treatment of degraded area. Measures for effective protection shall be taken up.

5.2.11 Cross cutting interventions proposed:-
- Improving fuel-wood efficiency and promoting alternative energy sources.
- Promotion of fuel efficient devices will be facilitated in the selected area.

5.2.12 Livelihood improvement activities proposed:-
-Dairy farming, NTFP based livelihoods, Poultry farming, eco tourism activities,

5.2.13 Area proposed to be treated under different sub missions in Umaria   District:-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	4755	4755	4755	0	0	14265
2.	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	765	765	765	0	0	2295
3.	Submission 3(a) Plantation in urban and peri urban areas	8	7	5	0	0	20
4.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	580	580	580	0	0	1740
5.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	105	105	105	0	0	315
	Total	**6213**	**6212**	**6210**	**0**	**0**	**18635**

During five year project period total 18635 ha. area shall be treated. Since maximum area of the project is moderately dense forest, the largest component of treatment belongs to this category only. To reduce pressure on the forest 2055 ha. is proposed to be brought under agroforestry activities.

5.2.14 Budget for Umaria district:-
Submission wise budget summary for Umaria district is given below-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	1365.67	84.15	507.44	1957.26
2017-18	2815.54	70.125	1009.98	3895.64
2018-19	3559.49	58.74	1266.38	4884.62
2019-20	2437.12	47.685	869.68	3354.49
2020-21	1193.34	38.61	431.18	1663.13
Total	**11371.16**	**299.31**	**4084.67**	**15755.14**

Total 157.55 cr. is proposed to be spent during five year project period.

Details of budget for Umaria Division is given in given Annexure ii.

5.3 Landscape Plan Balaghat District

Balaghat district is constituted by the South Eastern part of Satpura hills and upper Wainganga valley. The total geographical area of the district is 9229 sq. km. out of which 4823 sq.km. is forest area thus more than 52% of the district is under forest area.
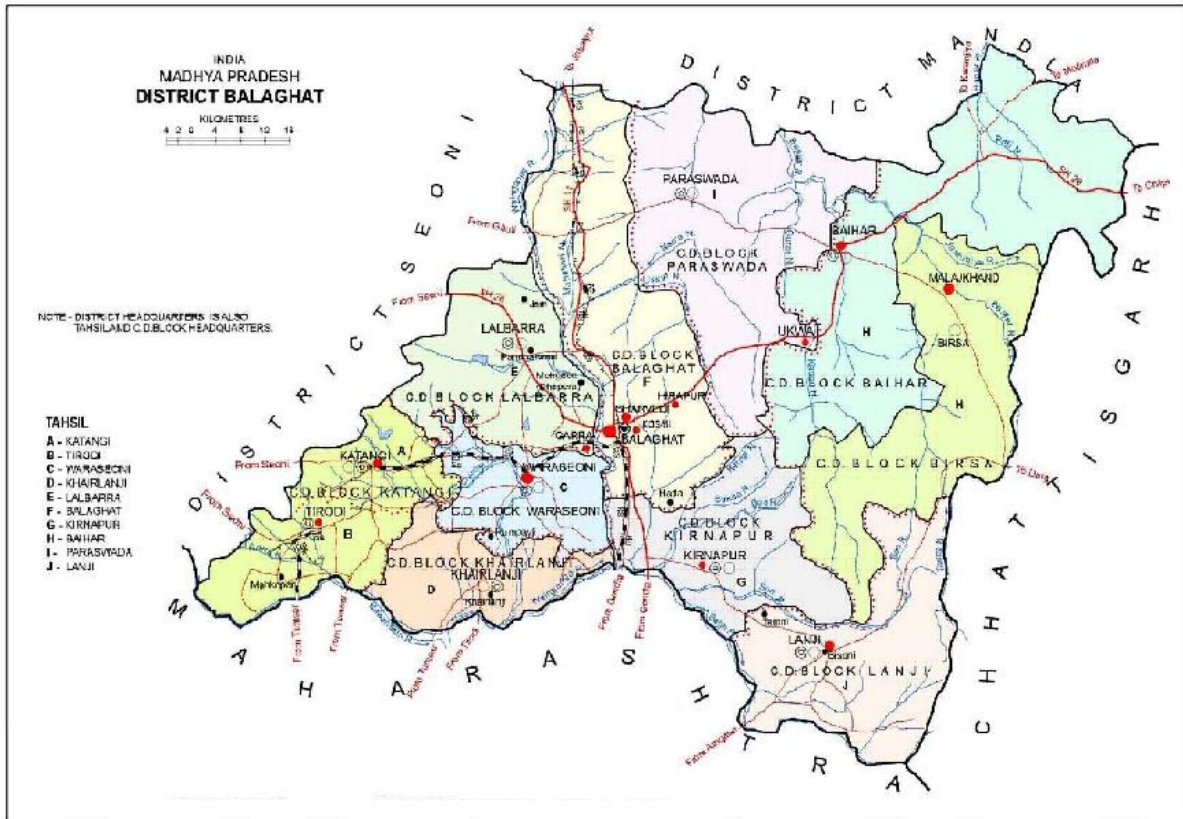
 The district extends from 21 ⁰ 19' to 22 ⁰ 21' north latitude and 79 ⁰ 31' to 81 ⁰ 3' east longitude. The Wainganga and its tributaries are the most important rivers in this district. The town of Balaghat is situated on the bank of Wainganga river which flows from north to south through the district. The Bagh, Nahra and Uskal rivers are the tributaries of the Wainganga. The Bawanthadi and Bagh rivers define the boundaries with Maharashtra state. Geographically the district is divided into three distinct parts:-

1. The southern lowlands, a slightly undulating plain comparatively well cultivated and drained by the Waingangā, Bagh, Deo and Son rivers.

2. The long narrow valley known as Mau Taluka, lying between the hills and the Wainganga river and comprising a long narrow irregular shaped low land tract intersected by hill ranges and peaks covered with dense jungle and running generally from north to south.

3. The lofty plateau comprising irregular ranges of hills broken with numerous valleys and generally running from east to west. The highest point in the hills of district lies in Bhaisanghat range which is about 910 meter above mean sea level. The Banjar, Halon and Jamunia river, tributaries of Narmada, drain a portion of the upper plateau.

 The district is broadly covered by three types of soils. Black cotton soils, Sandy loam & lateritic soil. The climate of Balaghat District is sub- tropical characterized by a hot summer and general dryness

except during the southwest monsoon season. The normal annual rainfall of Balaghat district is 1294.5 mm. The normal maximum temperature recorded during the month of May is 43° C and minimum temperature during the month of December is 8° C.

Balaghat district is famous for its Copper and Manganese mines. The district is endowed with rich biodiversity and half of the world famous Kanha Tiger Reserve is situated in Balaghat district. Apart from this there are two territorial forest divisions in Balaghat district and the L2 landscapes selected for GIM, lie in South Balaghat Division.

5.3.1 <u>Forest:-</u>

Forests of South Balaghat Division are mainly mixed forest which belongs to Southern Dry Mixed Deciduous Forest class as per the Champion and Seth classification. Forest area of the division possesses very good bamboo forest also. The bamboo area in the district used to be around 2.10 lac ha. but after the gregarious flowering during 2004-05 and 2005-06 bamboo area is considerably reduced. Even than Balaghat is still known for its bamboo forest and is the biggest bamboo producing district in Madhya Pradesh. It supplies bamboo to many other districts of the state to meet their basic Nistar requirements. Three types of bamboo are found in the forest of Balaghat. They are Desi Bamboo (Dendrocalamus strictus), Katang Bamboo (Bamboosa arundinaceae) and in a very small area Balan Bamboo (Cephalastachym bergraile munro . The other prominient species of the forest are Saja, Bija, Dhawda, Garari, Lendia, Tendu, Palash, Mahua, Baheda, Siris. The area wise distribution of the forest of S. Balaghat division is as follows:-

Reserved Forest	PF	Total
133671.243 ha.	54159.174 ha.	187830.417 ha.

5.3.2 <u>Wild life:-</u>

Due to rich biodiversity, the forests of South Balaghat Division are home to a number of wild animals. A very crucial wildlife corridor between Kanha and Pench Tiger Reserve also passes through this division and in dense forest patches of Logur and Sonewani area , Tigress with cubs have been sighted. The prominent wild life of this division includes Tiger, Leopard, Sloth bear, Bison, Spotted deer, Chausingha, barking deer, wild boar, Hyena etc.

5.3.3 <u>Dependence on forest:-</u>

There are 797 revenue villages in the division out of which 682 villages are located within 5 km. radius of the forest boundary. These villages are dependent on forest for their basic needs of fuel, fodder and small timber. As per working plan estimate the annual requirement of timber, fuel wood and bamboo in the division is as follows:-

S. No.	Item	Annual
1.	Timber	21597 cmt.
2.	Fuel wood	234896 cmt.
3.	Bamboo	1506310 no.

The cattle population of the division is about 640178 which is mostly grazing in forest area because practice of stall feeding is not prevalent in the area .The cattle population makes 518773

cattle units where as the grazing carrying capacity of the forest area of the division is 239498 cattle units. Thus cattle population is 2.5 times more than the bearing capacity of the forest and is exerting tremendous pressure on the forest.

5.3.4 Joint Forest management:-

Out of 797 revenue villages of the division, 682 villages i.e. 85% of the villages are located near forest area .To seek their cooperation in forest protection and management 160 Forest Protection Committees and 90 Village Forest Committees, a total 250 JFMC have been constituted. These JFMC have a total membership of 98005 members and cover 1355.37 sq. km. of forest area of the division.

5.3.5 Demography:-

Total area of the district		9229 sq. km.
Literacy rate		77.1%
No. of villages		1272
No. of households		390930
Population	Rural	1456882
	Urban	244816
	Total	1701698
Population	Male	842178
	Female	859520
	Total	1701698
Scheduled caste population		125426
Scheduled tribe population		383026

Scheduled Caste form 7.37% and Scheduled Tribe form 22.51% of the population of the district. One of the prominent primitive tribe Baiga also lives in Balaghat district. A large number of population 4,59,796 which is 51.49% of the total worker population of the district ,work as agricultural laborer.

5.3.6 L-2 Landscapes selected in Balaghat District.:-

Following 12 milli watersheds of S. Balaghat division have been selected as L2 landscapes:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G3b	1324.538	941.798	64.84	2331.176	3571.313	5902.489
2.	4E5G3c	390.586	447.903	2454.793	3293.282	3217.322	6510.604
3.	4E5G3d	579.197	866.064	493.99	1939.251	4260.988	6200.239
4.	4E5G3j	855.462	443.626	1787.057	3086.145	2306.408	5392.553
5.	4E5G3k	2690.392	677.584	487.666	3855.642	1053.938	4909.58
6.	4E5G3m	1103.148	422.919	75.357	1601.424	2710.157	4311.581
7.	4E5G3p	2796.418	245.912	57.166	3099.496	2457.273	5556.769
8.	4E5G5j	905.583	804	209.759	1919.342	10148.06	12067.4
9.	4E5G5k	2409.066	423.817	770.373	3603.256	4231.544	7834.8
10.	4E5G5m	3263.14	619.244	30.155	3912.539	3796.092	7708.631
11.	4E5G5t	461.33	337.273	24.277	822.88	4049.472	4872.352
12.	4E5G5u	1224.288	183.166	168.484	1575.938	1860.433	3436.371
Total		18003.15	6413.306	6623.917	31040.37	43663	74703.37

Thus the milliwatersheds selected as L2 landscapes for Balaghat district have an area of 74703.37 ha. These 12 milli-watersheds are the operational units for implementation of GIM. Selected milliwatersheds possess forest as well as non forest area. These 12 milliwatersheds have 71 microwatersheds out of which 62 microwatersheds have forest as well as non forest area whereas remaining 03 microwatersheds are purely in non forest area and 06 microwatersheds are completely in forest are .The forest area in the milli -watersheds is largely dense forest which needs measures to supplement natural regeneration and protection and assistance to revive the natural bamboo forest.
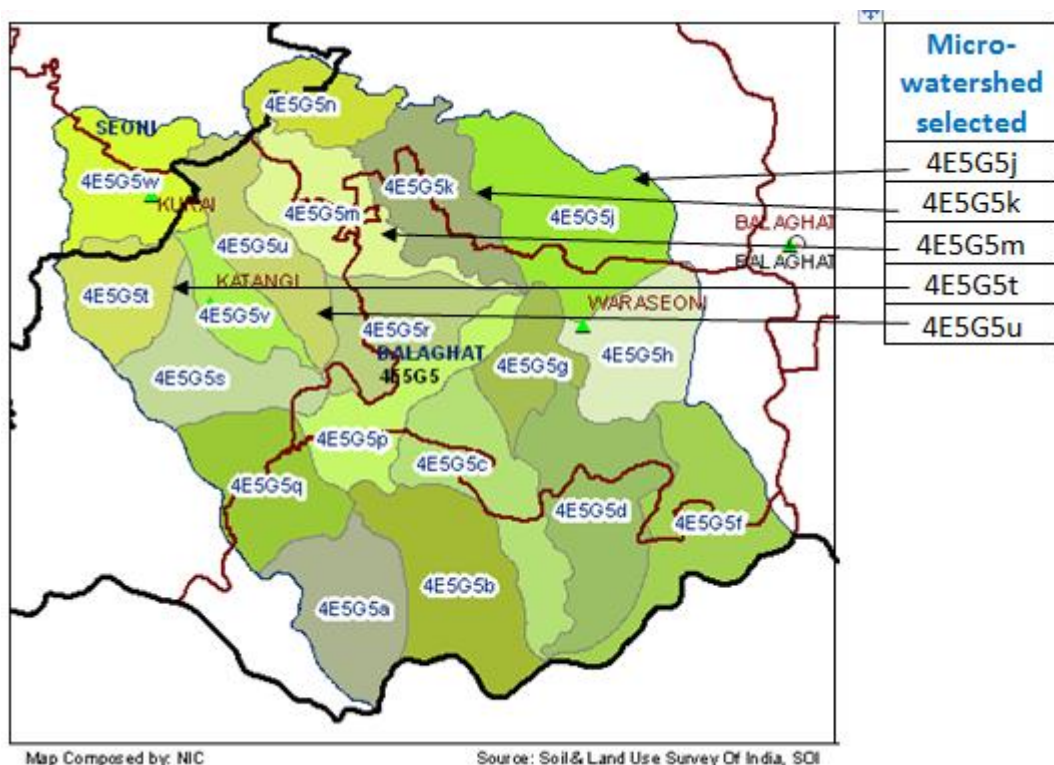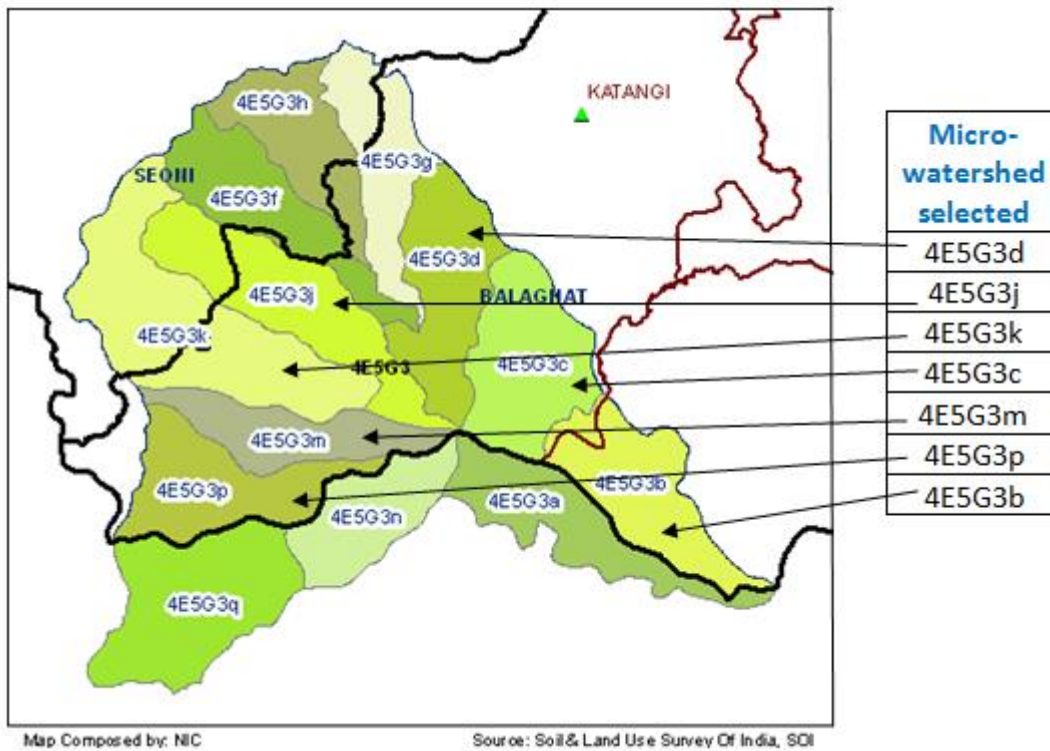
5.3.7 L3 landscapes selected in Balaghat District:-

The 12 milli-watershed selected as L2 landscapes comprises of 71 micro-watersheds which are the working unit of the GIM. All the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

5.3.7.1 Milli-watershed no. 4E5G3b:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G3b1	0	29.815	13.105	42.92	997.122	1040.042
2.	4E5G3b2	67.339	197.769	23.561	288.669	848.261	1136.93
3.	4E5G3b3	612.773	220.003	16.83	849.606	510.634	1360.24
4.	4E5G3b4	178.761	339.397	0	518.158	1040.984	1559.142
5.	4E5G3b5	465.665	154.814	11.344	631.823	174.312	806.135
Total		**1324.538**	**941.798**	**64.84**	**2331.176**	**3571.313**	**5902.489**

5.3.7.2 Milli-watershed no. 4E5G3c:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G3c1	58.558	265.448	33.628	357.634	1265.161	1622.795
2.	4E5G3c2	0.208	32.858	103.256	136.322	1339.061	1475.383
3.	4E5G3c3	35.364	26.585	754.796	816.745	380.083	1196.828
4.	4E5G3c4	36.79	12.051	880.755	929.596	233.017	1162.613
5.	4E5G3c5	259.666	110.961	682.358	1052.985	0	1052.985
Total		**390.586**	**447.903**	**2454.793**	**3293.282**	**3217.322**	**6510.604**

5.3.7.3 Milli-watershed no. 4E5G3d:-

The micro-watershed selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G3d1	37.055	117.076	11.653	165.784	1206.825	1372.609
2.	4E5G3d2	310.744	80.681	24.681	416.106	187.456	603.562
3.	4E5G3d3	31.52	457.419	33.616	522.555	1380.294	1902.849
4.	4E5G3d4	193.074	141.869	188.75	523.693	780.629	1304.322
5.	4E5G3d5	6.804	69.019	235.29	311.113	705.784	1016.897
Total		**579.197**	**866.064**	**493.99**	**1939.251**	**4260.988**	**6200.239**

5.3.7.4 Milli-watershed no. 4E5G3j:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G3j1	90.326	279.196	35.888	405.41	490.905	896.315
2.	4E5G3j2	423.156	14.412	350.988	788.556	297.441	1085.997
3.	4E5G3j3	112.982	21.144	626.479	760.605	400.553	1161.158
4.	4E5G3j4	104.713	0	637.253	741.966	73.718	815.684
5.	4E5G3j5	110.787	49.422	119.785	279.994	585.333	865.327
6.	4E5G3j6	13.498	79.452	16.664	109.614	458.458	568.072
	Total	**855.462**	**443.626**	**1787.057**	**3086.145**	**2306.408**	**5392.553**

5.3.7.5 Milli-watershed no. 4E5G3k:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G3k1	482.477	423.951	66.484	972.912	399.283	1372.195
2.	4E5G3k2	705.361	93.428	388.394	1187.183	423.771	1610.954
3.	4E5G3k3	777.945	0	15.374	793.319	230.884	1024.203
4.	4E5G3k4	617.475	137.268	3.164	757.907	0	757.907
5.	4E5G3k5	107.134	22.937	14.25	144.321	0	144.321
	Total	**2690.392**	**677.584**	**487.666**	**3855.642**	**1053.938**	**4909.58**

5.3.7.6 Milli-watershed no. 4E5G3m:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G3m1	0.004	66.686	30.216	96.906	791.042	887.948
2.	4E5G3m2	0.004	113.832	7.752	121.588	741.179	862.767
3.	4E5G3m3	445.765	114.712	1.904	562.381	709.915	1272.296
4.	4E5G3m4	657.375	127.689	35.485	820.549	468.021	1288.57
	Total	**1103.148**	**422.919**	**75.357**	**1601.424**	**2710.157**	**4311.581**

5.3.7.7 Milli-watershed no. 4E5G3p:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G3p1	339.951	63.252	0	403.203	683.631	1086.834
2.	4E5G3p2	550.558	113.097	0	663.655	233.686	897.341
3.	4E5G3p3	353.117	18.084	0.386	371.587	906.838	1278.425
4.	4E5G3p4	772.843	43.486	16.632	832.961	491.475	1324.436
5.	4E5G3p5	779.949	7.993	40.148	828.09	141.643	969.733
	Total	2796.418	245.912	57.166	3099.496	2457.273	5556.769

5.3.7.8 Milli-watershed no. 4E5G5j:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G5j1	0	97.9	37.978	135.878	979.205	1115.083
2.	4E5G5j2	19.664	84.232	2.348	106.244	1805.066	1911.31
3.	4E5G5j3	161.048	64.344	5.669	231.061	1489.177	1720.238
4.	4E5G5j4	0	0	0	0	805.91	805.91
5.	4E5G5j5	0	0	37.877	37.877	1479.264	1517.141
6.	4E5G5j6	140.174	12.462	28.83	181.466	1655.631	1837.097
7.	4E5G5j7	298.508	82.655	88.58	469.743	657.483	1127.226
8.	4E5G5j8	18.972	16.48	0	35.452	791.217	826.669
9.	4E5G5j9	267.217	445.927	8.477	721.621	485.103	1206.724
	Total	905.583	804	209.759	1919.342	10148.06	12067.4

5.3.7.9 Milli-watershed no. 4E5G5k:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G5k1	0	0	141.026	141.026	851.869	992.895
2.	4E5G5k2	0	0	195.76	195.76	598.308	794.068
3.	4E5G5k3	0	22.28	120.947	143.227	849.324	992.551
4.	4E5G5k4	375.298	183.212	71.876	630.386	785.375	1415.761
5.	4E5G5k5	874.711	120.255	32.528	1027.494	0	1027.494
6.	4E5G5k6	700.268	36.283	148.566	885.117	302.778	1187.895
7.	4E5G5k7	35.296	0.089	57.877	93.262	700.421	793.683
8.	4E5G5k8	423.493	61.698	1.793	486.984	143.469	630.453
	Total	2409.066	423.817	770.373	3603.256	4231.544	7834.8

5.3.7.10 Milli-watershed no. 4E5G5m:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G5m1	164.89	75.562	1.279	241.731	923.441	1165.172
2.	4E5G5m2	214.66	34.226	0	248.886	538.056	786.942
3.	4E5G5m3	357.17	64.14	0	421.31	220.712	642.022
4.	4E5G5m4	75.518	93.219	0	168.737	981.447	1150.184
5.	4E5G5m5	500.808	152.351	0	653.159	205.455	858.614
6.	4E5G5m6	595.008	179.983	22.119	797.11	615.303	1412.413
7.	4E5G5m7	203.903	19.763	6.757	230.423	311.678	542.101
8.	4E5G5m8	1151.183	0	0	1151.183	0	1151.183
	Total	**3263.14**	**619.244**	**30.155**	**3912.539**	**3796.092**	**7708.631**

5.3.7.11 Milli-watershed no. 4E5G5t:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G5t1	26.242	112.194	0.318	138.754	762.974	901.728
2.	4E5G5t2	51.121	50.998	13.936	116.055	989.007	1105.062
3.	4E5G5t3	171.69	95.54	0	267.23	706.251	973.481
4.	4E5G5t4	0	0	0	0	1168.245	1168.245
5.	4E5G5t5	212.277	78.541	10.023	300.841	422.995	723.836
	Total	**461.33**	**337.273**	**24.277**	**822.88**	**4049.472**	**4872.352**

5.3.7.12 Milli-watershed no. 4E5G5u:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G5u1	0	0	0	0	1058.291	1058.291
2.	4E5G5u2	0	0	19.164	19.164	1664.819	1683.983
3.	4E5G5u3	0	0	0	0	1364.021	1364.021
4.	4E5G5u4	319.085	179.789	42.111	540.985	492.301	1033.286
5.	4E5G5u5	455.251	0.124	21.462	476.837	4.111	480.948
6.	4E5G5u6	449.952	3.253	104.911	558.116	0	558.116
	Total	**1224.288**	**183.166**	**168.484**	**1575.938**	**1860.433**	**3436.371**

5.3.8 Reason for selection of L2 landscapes:-

- Area is in the proximity of Kanha, Pench & Nagzira tiger reserves and some part falls into very important Kanha-Pench Tiger corridor also.   Area is frequented by tigers, leopards and other wild animals.

- Area is under severe pressure from grazing, mining and other biotic activities.

- Area is very rich in biodiversity, hence its conservation is crucial for conservation of biodiversity in Satpuda landscape. The area contains endangered plant as well as animal species.

- Area is home to many central Indian aboriginals including Baigas, Gonds.

- The area is of ecological importance area as it falls in the catchment of river Bawanthadi, which is lifeline of district Balaghat of Madhya Pradesh and district Bhandara of Maharastra. Because of Rajiv sagar dam on Bawanthadi and Wainganga river dam and their canal networks, about 45% area is under canal irrigation. Therefore, conservation of catchment is necessary to sustain the irrigation network.

- Majority of the population in the area is BPL including Scheduled Castes and Scheduled Tribes. The livelihood opportunities are less. There are very less industries in the area. Hence people are largely dependent on subsistence farming and forests for their survival. Farming being largely rain fed and Income from agriculture is meager therefore people are heavily dependent on the forest resources for additional income. Hence there is huge biotic pressure upon the forest and ecology of the area.

- Forest land is 48.1% of total geographical area of South Balaghat Division which is under severe pressure from grazing, mining and poverty because of these biotic pressures forest area is prone to degradation and habitat fragmentation.

- The main drivers of forest degradation are grazing, mining and poverty which sometimes leads to encroachment on forest land. Balaghat being Naxal affected district, employment generation through forestry activities is need of the hour to combat the expansion of naxalite activities.

- The bamboo area affected by the gregarious flowering needs special attention so that the bamboo area can be restored.

- Preperatory activities for GIM were undertaken in South Balaghat Division.

5.3.9 Possible solutions to enhance forest cover, improve ecosystem services and address the drivers of degradations:-

- Measures will be taken to combat biotic pressure .The main activities to achieve this goal would be to control and regularize the grazing, control on illicit felling, enhancing fodder, fuel wood, bamboo, small timber and NTFP production through plantation of selective species.

-Enhancement of forest cover and its productivity in forest area- It will be achieved through efficient fire management, plantations and soil and water conservation works in forest area. Works to

assist natural regeneration shall be taken up in the forest area. Bamboo area to be given effective protection and soil working.

- Enhancement of forest cover in non forest area shall be taken up through Agro-forestry activities to reduce the pressure on the forest area

-Soil and water conservation activities to be taken up in forest as well as non forest area- It will be done on watershed treatment methodology i.e. the treatment from ridge to valley of the watershed.

-Reduction in the degree of dependence on forest- It will be achieved through promotion of alternate energy resources such as biogas, solar devices, LPG and fuel efficient stoves and introduction of various community livelihood opportunities and plantation of the species which are suitable to increase the fuel, fodder, small timber and NTFP production.

-Livelihood opportunities -Various livelihood activities such as Tusser Silk Production, Dairy Farming, NTFP based livelihoods, Kirana store, Sewing machine, Poultry, Dona pattal manufacturing and Fish farming will be promoted in all villages.

- Development of Social fencing- watershed approach of managing natural resources has holistic components of socio economic and ecological development. This will ensure participatory forest management.

5.3.10 <u>Proposed interventions</u>:-

- Restoration of Degraded Open forest - Open forest area will be undertaken for reforestation with participation of community and forest department. The model of reforestation will be such as to fulfill the local needs of fuel wood, fodder, small woods for construction of huts etc.

- Promotion of tree outside forest -Under various models of agro forestry plantation of tree outside forest will be promoted to reduce forest dependence.

-Meeting energy needs through clean and alternative sources .Use of Biogas, solar energy, LPG, will be promoted in the poor households to reduce the fuel wood requirements.

- Strengthening of Forest department and JFMC- JFMC level and Division level workshop and training programs and awareness generation programs will be conducted for field staff and JFMC members.Young and educated youth will be selected from JFMCs and they will be trained in account keeping and forest management aspects. These community foresters will assist the forest staff in implementation of mission activities.

- Protection and maintenance activities-The maintenance and protection of existing forest cover is as much important as encouraging the new plantation and treatment of degraded area. The assistance of JFMCs will be ensured for maintenance of existing works and for support to the field staff for fire-watching and protection activities in the area.

5.3.11 <u>Cross cutting interventions proposed</u>:- -Improving fuel-wood efficiency and promoting alternative energy sources. Distribution of pressure cooker, promotion of solar devices, Bio-gas plants depending on the need will be facilitated in the selected area.

5.3.12 Livelihood improvement activities proposed:-

Various livelihood activities like Dairy farming, Sewing machine distribution and training, NTFP based livelihoods activities, Poultry farming, Sericulture and Lac cultivation activities shall be promoted in the area.

5.3.13 Area proposed to be treated under different sub missions in Balaghat District:-

Year wise description of the area to be treated under different submission in selected 12 L2 landscapes is given below:-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	5705	5400	4810	0	0	15915
2.	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	1435	1205	1170	0	0	3810
3.	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	15	11	10	0	0	36
4.	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	175	155	150	0	0	480
5.	Submission 2 (f) Restoration of abandoned mining area	25	15	10	0	0	50
6.	Submission 3(a) Plantation in urban and peri urban areas	12	10	8	0	0	30
7.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	2900	2700	2500	0	0	8100
8.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	573	560	517	0	0	1650
	Total	**10840**	**10056**	**9175**	**0**	**0**	**30071**

Thus a total of 30071 ha. area will be taken up for treatment under different submissions. Since the selected landscapes bear large no of moderately dense forest, the maximum activities are in Submission 1 (a) which is for the treatment of Moderately dense forest cover, but showing degradation. About 50 % treatments belong to this submission only which will cover the treatment to bamboo forest also. Next important component is of Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows .Practice of Agro-forestry is quite prevalent in the district and one can find even the forestry species growing on the agricultural fields .This will help in the implementation of activities under this mission. There are certain mining areas which have also been taken care of and reclamation work shall be taken up in these areas.

5.3.14 **Budget for Balaghat district**:-

Submission wise budget summary for Balaghat district is given below-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	2318.40	57.948	831.72	3208.06
2017-18	4601.82	48.279	1627.53	6277.63
2018-19	5462.60	39.831	1925.85	7428.28
2019-20	3685.34	30.822	1300.66	5016.82
2020-21	1836.96	21.78	650.56	2509.30
Total	**17905.11**	**198.66**	**6336.32**	**24440.09**

A total budget of Rs 244.40 cr. has been proposed for Balaghat district for a period of five years.

Details of budget for South Balaghat Division is given in given Annexure iii.

5.4 Landscape Plan Hoshangabad District

Hoshangabad district lies in the Narmada River valley and the Narmada form the northern boundary of the district.
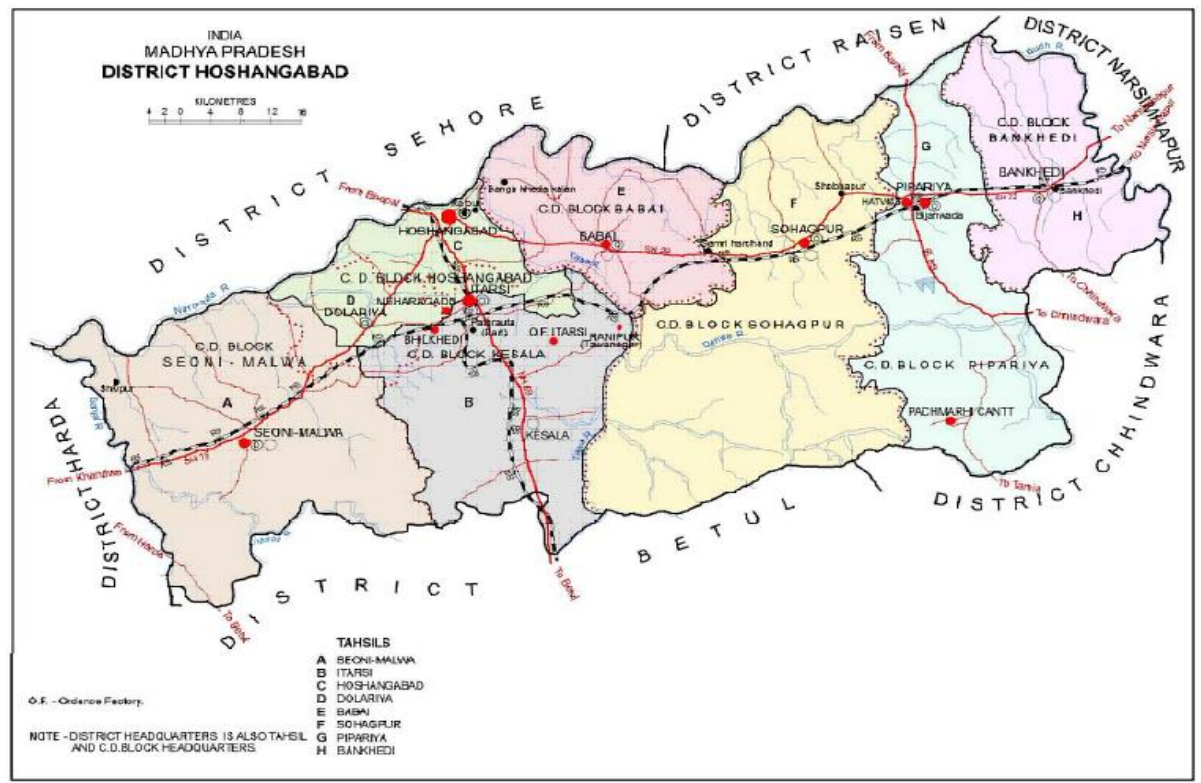
Another major river of the district is Tawa which is tributary of Narmada River. The water reservoir on Tawa River provides irrigation to a large part of the district, which is known for its wheat and soybean production. Tawa dam is a major irrigation system in the district. About 60% of the total area of Hoshangabad district is irrigated by Tawa canal system. Another important river is Denwa which originates from south – eastern part of the district and flows from east to west before joining Tawa river. The other prominent rivers of the district are Moran, Ajnal, Ganjal and Dudhi. A large part of the district is covered by beautiful mountain ranges of Satpuda hills and famous hill station Pachmadi is located in these hills. The district is situated between $21^0 53'$ to $22^0 59'$ latitude and $76^0 47'$ to $78^0 44'$ longitude. The altitude varies from 220 meter to 780 meter above mean sea level. The average rainfall of the district is 1225 mm and temperature varies from minimum average temperature 15^0 c to max. average temperature of 34^0 c. The total area of the district is 6703 sq. km. and the famous Satpuda Tiger Reserve lies in the beautiful forests of the district. Geographically the district can be divided into two prominent formations, the plateau of Budhimai and Satpura Mahadev mountain ranges. The area may be divided into three zones on the basis of the Physiography (1) the Satpura range in the south, (2) An alluvial plain in the middle and (3) Badland topography zone confined to the vicinity of Narmada river. The maximum width of the valley between Satpura and Narmada river is about 30 kms. Soils of the area are characterized by black grey, red and yellow colors, often mixed with red and black alluvium and ferruginous red ravel or lateritic soils. These soils are commonly known as black soils. About 15% of the area is covered by sandy loam soils immediately on the high bank of Tawa river. Remaining part is occupied by clay loam with big pockets of sandy clay loam and sandy loam. District is very rich in the field of agriculture due to good sources of irrigation and fertile alluvial soil. Wheat and gram are the main crops grown during Rabi season. Soya bean, Mustard, Til and Groundnut

are the main oilseeds produced here. The farmers have started the production of Sunflowers and Basmati variety of Paddy also.

There is one territorial forest division and one National Park in the district. For the purpose of Green India Mission, L2 landscapes selected lie in Hoshangabad Territorial Forest Division.

5.4.1 <u>Forest:-</u>

Forests of Hoshangabad Division are mainly Teak forests corresponding to South Tropical Dry Deciduous Teak forest class. The other one is Mixed forest of Southern Tropical Dry Deciduous Mixed forest class. The main species of the forest are Teak, Saja, Dhawda, Haldu, Gurjan, Tendu, Achar,Tinsa etc. Dendrocalamaus strictus is the only bamboo species occurring in the forest. The forest area distribution is as follows:-

Reserve Forest	Protected Forest	Total(ha)
67462.352	45502.798	112965.15

About half portion of the forest tract is hilly and lies in Satpura mountain range. The regeneration of Teak species in the forest is not satisfactory.

5.4.2 <u>Wild Life:-</u>

Satpura Tiger Reserve is situated adjacent to Hoshangabad forest division and the forest of this division serve as buffer zone for the tiger reserve. The forests of Hoshangabad division are also valuable component of the wild life corridor between Satpura – Melghat Tiger Reserves. Among big carnivores Leopard is found predominantly. Tiger sighting is also reported in the area. Other carnivores like hyena, wild dog, jackal, wild cat are also found in the area. Herbivore species found in the area are blue bull, spotted deer, sambhar, barking deer, wild boar, sloth bear, chinkara etc.

5.4.3 <u>Dependence on forest:-</u>

There are total 644 villages in the division out of which 351 villages are situated within a range of 5 km. from forest boundary. The northern part of the district is well connected with the network of irrigation canal of Tawa Reservoir where as the southern part, which has good forest area, is comparatively less irrigated .It is in this area where most of the forest villages are situated. The economy is mainly based on agriculture and forest resources. A large chunk of the farmers are of small land holdings. The dependence of people living near forest on forest for fuel wood, fodder and small timber is too high. As per working plan estimate the annual requirement of timber is 6997 cmt, fuel wood is 252213 quintal and bamboo is 4013790 pieces. For most of the requirement people are dependent on forests where annual timber production is 5000cmt, fuel wood is 24000 quintals and bamboo is 50000 pieces. Thus the gap in demand and supply is too high. Beside, there are 335701 cattles in the district which is equivalent to 335548 cattle units. The grazing carrying capacity of the forest of Hoshangabad district is about 118047 cattle units only .Since most of the cattle depend on forest for their fodder requirement ,thereby exerting great pressure on forest. Tusser silk rearing on Saja trees in the forest is a prominent activity in the district which provides additional income to the villagers.

5.4.4 Joint Forest Management:-

To garner the support of the local communities for forest protection and management following JFMCs have been constituted in the division:-

Forest Protection Committee	Village Forest Committee	Total
154	71	225

Total 1119 sq. km. area which is about 99 % of the forest area of the division, has been assigned to these committees. Thus almost the whole division has been brought under Joint Forest Management.

5.4.5 Demography:-

As per2011 the census data of the district are as follows:-

Total area of the district		6703 sq.km.
Literacy rate		75.3%
No. of villages		921
No. of households		255952
Population	Rural	851356
	Urban	389986
	Total	1241350
Population	Male	648725
	Female	592625
	Total	1241350
Scheduled caste population		205007
Scheduled tribe population		197300

The Scheduled caste form 16.51 % and the Scheduled tribes form 15.89 % of the total population .Main tribes are Gond and Korkus. About 38.06 % of the worker population i.e. 181967 people work as agricultural labourers.

5.4.6 L-2 Landscapes selected in Hoshangabad District:-

Following 5 milli watersheds of the division have been selected as L2 landscapes:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D5A2b	5819.317	1091.807	452.343	7363.467	5714.167	13077.63
2.	5D5B3a	0	0	0	0	2604.432	2604.432
3.	5D5B4s	2820.965	17.664	43.961	2882.59	1845.591	4728.181
4.	5D3D5s	1640.933	16.354	166.844	1824.131	4489.716	6313.847
5.	5D3D6k	5947.253	128.932	491.612	6567.797	63.845	6631.642
Total		**16228.47**	**1254.757**	**1154.76**	**18637.99**	**14717.75**	**33355.73**

Thus the milliwatersheds selected as L2 landscapes for Hoshangabad district have an area of 33355.73S ha. These 5 milli-watersheds are the operational units for implementation of GIM. Out of the selected 5 milliwatersheds, four milliwatersheds possess forest as well as non forest area where as the remaining one has only the non forest area. These 5 milliwatersheds have 30 microwatersheds out of which 20 microwatersheds have forest as well as non forest area whereas

remaining 02 microwatersheds are purely in non forest area and 08 microwatersheds are completely in forest are .The forest area in the milli –watersheds is largely dense forest which needs measures to supplement natural regeneration .

Milli-watershed selected
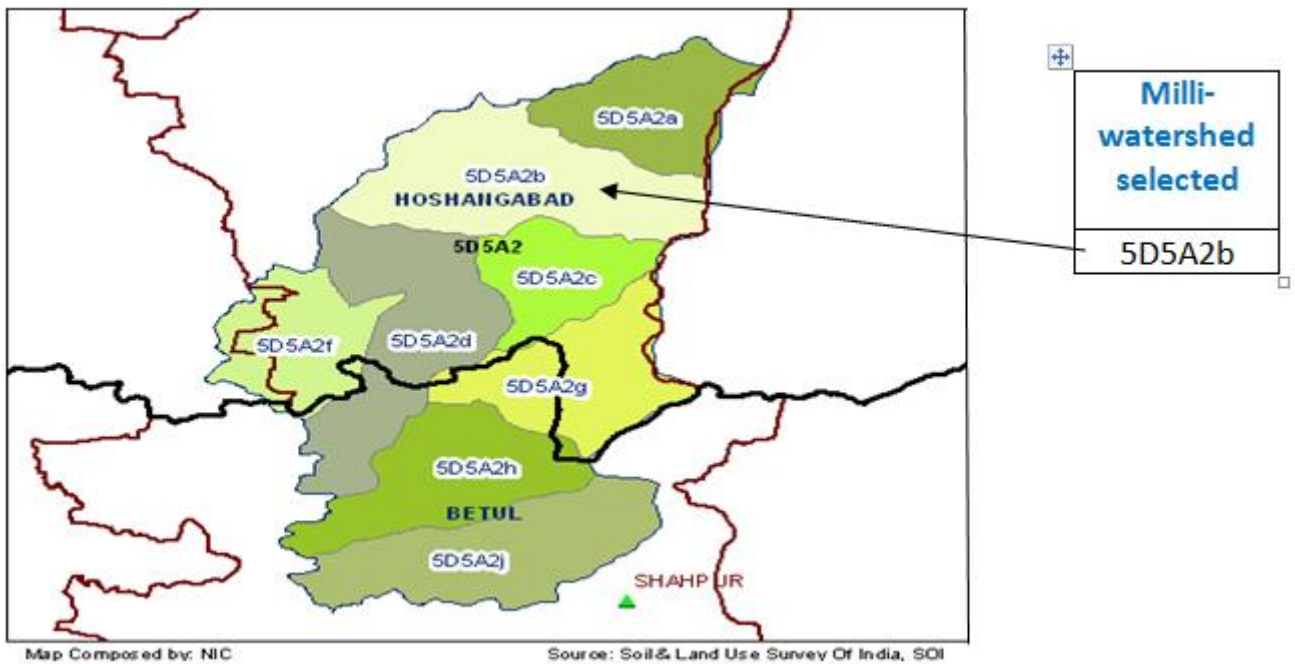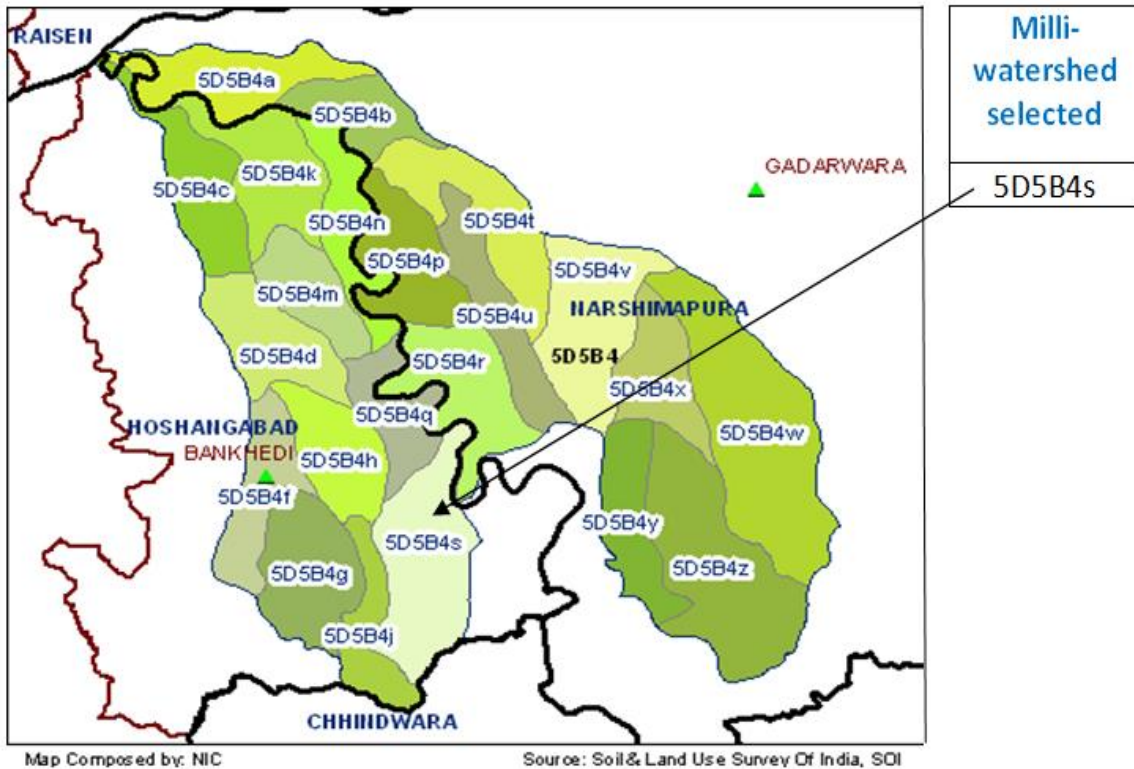
Milli-watershed selected
5D5B4s

Milli-Watershed selected
5D3D5s
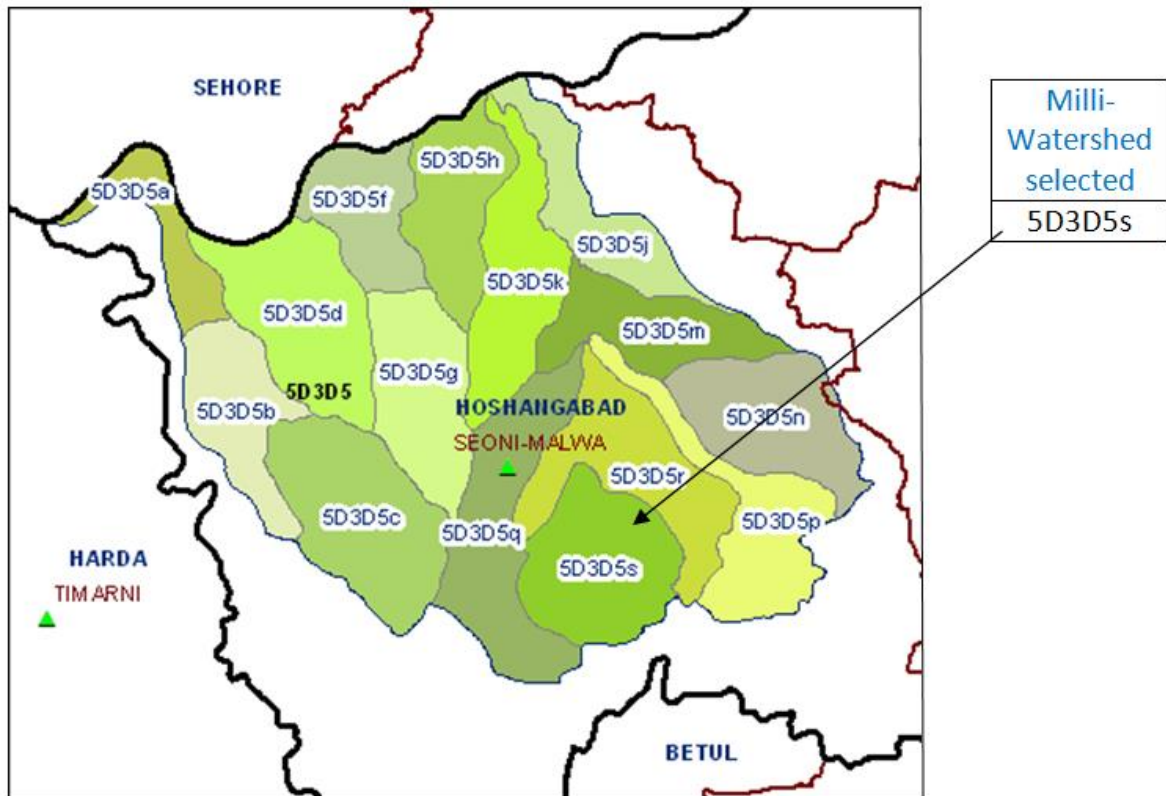
Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI
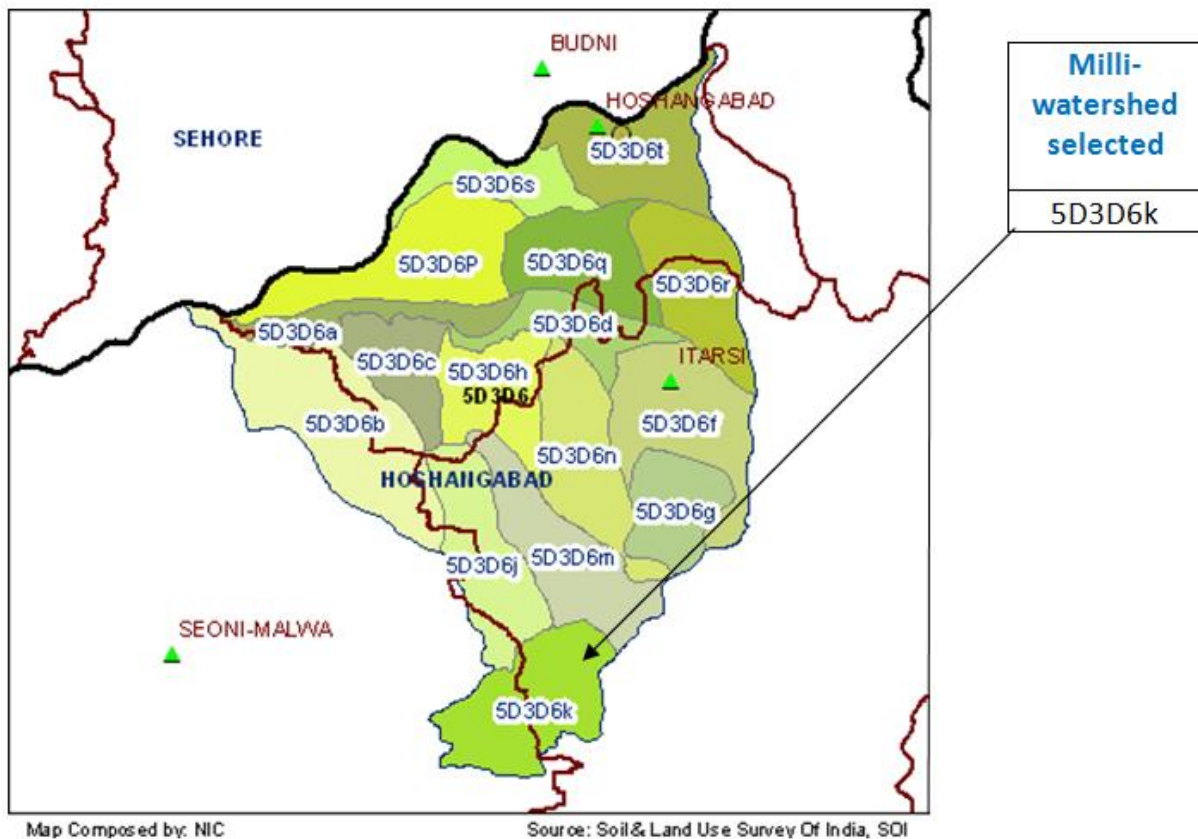
5.4.7   L3 landscapes selected in Hoshangabad District:-

The 12 milli-watershed selected as L2 landscapes comprises of 30 micro-watersheds which are the working unit of the GIM. All the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

5.4.7.1 Milli-watershed no. 5D5A2b :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D5A2b1	538.765	114.833	84.704	738.302	1543.658	2281.96
2.	5D5A2b2	416.158	845.19	112.462	1373.81	318.407	1692.217
3.	5D5A2b3	1151.221	67.481	76.765	1295.467	417.038	1712.505
4.	5D5A2b4	915.11	7.81	34.578	957.498	425.453	1382.951
5.	5D5A2b5	186.22	56.344	3.197	245.761	1007.44	1253.201
6.	5D5A2b6	140.829	0.149	0.004	140.982	1113.75	1254.732
7.	5D5A2b7	1012.774	0	96.084	1108.858	614.942	1723.8
8.	5D5A2b8	1458.24	0	44.549	1502.789	273.479	1776.268
Total		5819.317	1091.807	452.343	7363.467	5714.167	13077.63

5.4.7.2 Milli-watershed no. 5D5B3a:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D5B3a1	0	0	0	0	1287.775	1287.775
2.	5D5B3a2	0	0	0	0	1316.657	1316.657
Total		**0**	**0**	**0**	**0**	**2604.432**	**2604.432**

5.4.7.3 Milli-watershed no. 5D5B4s:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D5B4s2	386.209	0	0	386.209	626.821	1013.03
2.	5D5B4s3	450.11	0	0	450.11	309.532	759.642
3.	5D5B4s4	32.729	17.664	0	50.393	908.284	958.677
4.	5D5B4s5	1129.962	0	15.816	1145.778	0	1145.778
5.	5D5B4s6	821.955	0	28.145	850.1	0.954	851.054
Total		**2820.965**	**17.664**	**43.961**	**2882.59**	**1845.591**	**4728.181**

5.4.7.4 Milli-watershed no. 5D3D5s:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D3D5s1	147.558	0	18.176	165.734	618.629	784.363
2.	5D3D5s2	191.784	0	31.165	222.949	480.245	703.194
3.	5D3D5s3	0	0	34.804	34.804	1051.517	1086.321
4.	5D3D5s4	35.326	0	8.909	44.235	1193.522	1237.757
5.	5D3D5s5	564.487	0	73.79	638.277	0	638.277
6.	5D3D5s6	176	2.478	0	178.478	753.007	931.485
7.	5D3D5s7	525.778	13.876	0	539.654	392.796	932.45
Total		**1640.933**	**16.354**	**166.844**	**1824.131**	**4489.716**	**6313.847**

5.4.7.5 Milli-watershed no. 5D3D6k:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D3D6k1	1112.197	17.645	49.348	1179.19	0	1179.19
2.	5D3D6k2	818.684	0	72.317	891.001	0	891.001
3.	5D3D6k3	1115.908	101.671	146.228	1363.807	0	1363.807
4.	5D3D6k4	763.896	9.616	31.761	805.273	0	805.273
5.	5D3D6k5	583.501	0	12.832	596.333	0	596.333
6.	5D3D6k6	791.055	0	53.126	844.181	50.757	894.938
7.	5D3D6k7	762.012	0	126	888.012	13.088	901.1
Total		**5947.253**	**128.932**	**491.612**	**6567.797**	**63.845**	**6631.642**

5.4.8 Reason for selection of L2 landscapes:-

- Large no. of forest dependent population especially dependent on NTFP.

- Most of the population engaged in subsistence farming and dependent on agricultural labor for livelihood .There is 38 % of population working as agricultural laborer in the district.

- L2 landscapes selected are close to protected area and fall in and around the wildlife corridors between the Satpura and Melghat tiger reserve.

- Forest fires, fuel wood collection by local communities and in some places illicit felling of trees by organized gangs and local people is creating excessive biotic pressure on forest.Encroachment activities on forest land is creating additional pressure on forest.

- Shrinking water sources resulting in lowering water table.

- Selected landscapes form part of catchment of major rivers like Tawa, Denwa and ultimately Narmada.

- Area is rich in biodiversity but the natural regeneration in the forest is not very encouraging. Moderately dense forest require assistance in natural regeneration.

- Preperatory activities for GIM were undertaken in Hoshangabad Division.

5.4.9 Possible solutions to enhance forest cover, improve ecosystem services and address the drivers of degradations:-

-Assisted natural regeneration activities will be taken up in moderately dense forest area with plantation of endemic species to enhance the productivity of the forest.

-Degraded and open forest will be treated and protected so as to improve the quality of forests.

- Grazing will be regulated and native fodder species would be planted so as to reduce the biotic pressure on the forests.

-Effective forest protection measures shall be taken up.

- To reduce the pressure on forest Agro-forestry shall be encouraged in large scale.

- Since district is having a good network of canal system, plantation of local species shall be taken up along the canal tank bunds.

- Livelihood activities for the local communities will be taken up. District is known for tusser silk production on Saja and Lendia tree in forest area, this activity will be encouraged to expand in other areas.

-Use of Alternative energy sources like solar lighting, biogas, improved cooking stoves, improved chullah would be encouraged among the villagers so as to reduce their dependency on forest for fuel wood.

5.4.10 Proposed interventions:-

-Capacity building of forest personnel and strengthening of JFMCs – For this purpose JFMC level and Division level workshop and training program will be organized. Training will be provided to field staff and JFMC member on various aspects of forest management.

- Local leadership among the village youth shall be encouraged to motivate them for forest protection. These youth shall be trained in account keeping and forest management aspects.

-Protection and maintenance activities-The maintenance and protection of existing forest cover is as much important as the new plantation and treatment of degraded area. Local people shall be engaged for protection activities.

5.4.11 Cross cutting interventions proposed:-

Efforts to be made to improve fuel-wood efficiency and promotion of alternative energy sources .Awareness about the fuel saving devices like pressure cooker, solar devices, bio-gas plants, etc. shall be spread in the selected area.

5.4.12 Livelihood improvement activities proposed:-

Assistance will be provided in various livelihood activities like Dairy farming, NTFP based livelihoods, Sewing machine, poultry farming ,sericulture etc .

5.4.13 Area proposed to be treated under different sub missions in Hoshangabad District:-

The year wise distribution of the area to be treated under various submission of Green India Mission is given below:-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	5395	5070	5045	0	0	15510
2.	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	107	105	97	0	0	309
3.	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	175	165	140	0	0	480
4.	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	120	115	95	0	0	330
5.	Submission 3(a) Plantation in urban and peri urban areas	8	7	5	0	0	20
6.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	970	945	875	0	0	2790
7.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	240	232	203	0	0	675
	Total	**7015**	**6639**	**6460**	**0**	**0**	**20114**

Thus a total 20114 ha. area will be taken up for treatment under different submissions. Since the selected landscapes bear large no. of moderately dense forest, the maximum activities are in Submission 1 (a) which is for the treatment of Moderately dense forest cover but showing degradation. About 77 % treatments belong to this submission only .Next important component is of Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows. There is a good network of canal system in the district, hence activities under submission 4 (c) (Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds has also been proposed on large area. In this submission plantation of local species shall be taken up along the canal /tank bunds.

5.4.14 Budget for Hoshangabad district:-

Submission wise budget summary for Hoshangabad district is given below-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	1382.17	109.89	522.22	2014.28
2017-18	2773.86	94.875	1004.06	3872.79
2018-19	3375.69	84.15	1210.94	4670.78
2019-20	2293.22	73.92	828.50	3195.64
2020-21	1134.39	63.69	419.33	1617.41
Total	**10959.32**	**426.53**	**3985.05**	**15370.89**

A total budget of 153.70 cr. has been proposed for five years.

Details of budget for Hoshangabad Division is given in given Annexure iv.

5.5 Landscape Plan Seoni District

Seoni, one of the biodiversity rich district of Madhya Pradesh, is located between $21^0 36'$ to 22^0 57' North latitude and 79^0 19' to $80^0 17'$ East longitude.
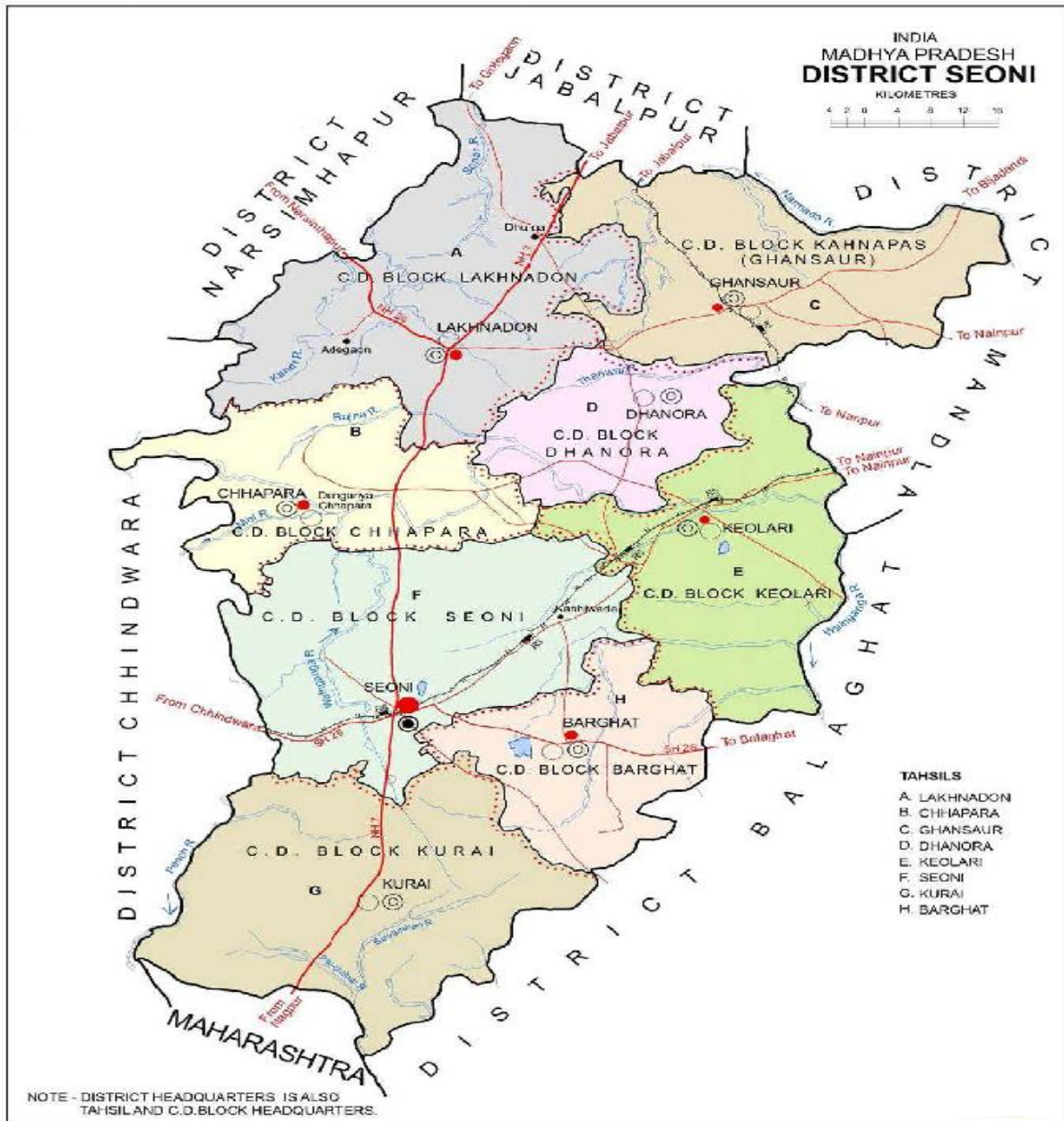
The district forms part of the Satpura table land, containing the headwaters of the river Wainganga which originates from village Rajola in Seoni district. The district is largely covered with forest and is remarkable for the beauty of its scenery and the fertility of its valleys. The world famous Pench Tiger Reserve is situated in the district. The northern and western portion includes the plateaus of lakhnadon and Seoni, the eastern section consists of the watershed and elevated   basin of the Wainganga and in south- west is a narrow strip of rocky land known as Dongartal. The plateaus of Seoni and Lakhnadon vary in height from 1800 to 2000 ft. Geologically the north part of Seoni consist of trap hills and south of crystalline rock. The soil of the plateaus is the rich black cotton soil formed by

disintegrated trap, of which about two third of the district is said to consist, but towards the south the soil is siliceous and contain a large portion of clay. The chief river of the district is Wainganga. The annual rainfall is 1234 mm. The average temperature varies from 19^0 c during winter to 34^0 c in the summer.

There are two territorial forest divisions in district Seoni, besides a National Park and Forest Development Corporation Division. For Green India Mission propose South Seoni division has been selected. The buffer zone transferred to Pench tiger reserve has also been included in the plan. The terrain of the division varies from plain to undulating hilly area. Most of the forest area lies in the southern ranges of Satpuda hills. On the south of these hills lies the plain of Kurrai, Khawasa and Katangi and on the north is Seoni plateau. The average elevation is from 340 meter to 845 meter above mean sea level. Bawanthadi, Hirri, Pench and Wainganga are the main rivers of the area. Pachdhar and Chandni are main tributaries of Bawanthadi where as Bander jhiria and Kapidobha are the main tributaries of Hirri River.

5.5.1   Forest:-

Satpura hill range traversing the division is covered with dense forest. On the southern slopes of these ranges there are high quality Teak forest .Satpura hill ranges rise in the west in the form of a 8 to 10 km wide plateau and moves towards east up to Kurrai. In this area lie the plain of Khamba and Khawasa. These hill ranges after crossing Kurrai form a large formation of hills and valleys near Chandrapur and Sakata, which makes watershed area of Bawanthadi river.

Mainly teak and mixed forests are found in South Seoni division where bamboo is present in under storey. As per Champion and Seth classification these are South Indian Tropical Moist Deciduous Forest, Southern Tropical Dry Deciduous Forest and Southern Dry Mixed Deciduous Forests. At some places Salai (Boswellia) forests are also present. The main species of these forests are Teak, Saja, Dhawda, Bija, Mundi, Garari, Bamboo etc. Apart from Dendrocalamus strictus, Katang Bamboo (Bambusa arundinacea) is also found in the forest of South Seoni division. In the Kareligarh hill range of the division Teak is found in association with natural sandalwood at some patches.

The area wise distribution of forest in the division is as follows:-

Reserve Forest	Protected Forest	Other area	Total (Sq. Km.)
584.52	172.18	2.25	758.95

5.5.2   Wild Life

Kurrai, Khawasa and Ganginala forest block of the division are rich biodiversity area which provide suitable habitat to various wild animals. As a result South Seoni division is rich in wild life. The main wild species found in the district are Tiger, Leopard, Hyena, Wild dog, Sloth bear, Spotted deer, Bison, etc. Besides, Pench, Bawanthadi and Hirri river and various water tanks support good aquatic fauna also. The world famous Pench Tiger Reserve is adjoining to the South Seoni division which forms a buffer and extended habitat for the wild animals.

5.5.3   Dependence of forest

There are 819 villages in the division out of which 519 villages are within the 5 km distance from the forest boundary. The above figures clearly show that about 89% of the population resides near forest. Most of this population is dependent on forest for their various basic needs. As per working plan estimate the annual requirement for timber is 28274 cmt., for fuel wood is 407747 cmt. and 2033312 pieces of Bamboo are required every year. For supply of these produce to villagers, forest department has opened 59 nistar depots but the gap between demand and supply is too high .Similarly there are 375196 cattle units in the division where as the grazing capacity of the division is only 86554 cattle units which shows the amount of pressure on the forest.

5.5.4   Joint Forest Management

In South Seoni division there are 519 villages located within a periphery 5 km. from the forest. The occupants of these villages have a major role to play in the protection and management of the forest. To ensure their active participation, total 376 JFMCs have been constituted in the division.These include 253 Forest Protection Committees and 123 Village Forest Committees. A total 1059 sq km. of forest area has been assigned to these JFMCs.

5.5.5   Demography:-

As per2011 the census data of the district are as follows:-

Total area of the district		8758 sq. km.
Literacy rate		72.1%
No. of villages		1579
No. of households		314215
Population	Rural	1215241
	Urban	163890
	Total	1379131
Population	Male	695879
	Female	683252
	Total	1379131
Scheduled caste population		130797
Scheduled tribe population		519856

Schedule cast form 9.48% where as scheduled tribe form 37.69 % of the population of the district. Thus the district is a tribal dominant district with Chapara, Dhanora, Ghansore, Kurrai and Lakhnadhon block of the district declared as tribal blocks. Main occupation of the district is agriculture with 54.99% of the worker population i.e. 376404 people working as agriculture laborers.

5.5.6 L-2 Landscapes selected in Seoni District:-

Following 11 milli watersheds of S. Seoni division have been selected as L2 landscapes:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1	4E5H4p	39.727	141.129	44.043	224.899	6559.18	6784.08
2	4E5G4r	1576.41	313.958	151.435	2041.8	6761.4	8803.2
3	4E5H4s	12.292	302.015	116.72	431.023	5971.41	6402.44
4	4E5G4v	46.644	625.89	58.178	730.712	10270	11000.7
5	4E5H5a	1658.347	105.125	1482.26	3246.34	4218.47	7464.81
6	4E5H5b	3206.68	848.081	86.017	4140.78	4001.05	8141.83
7	4E5H5c	2267.99	966.661	1121.7	4356.4	2188.18	6544.58
8	4E5H5g	334.971	190.957	294.94	820.864	3768.14	4589.01
9	4E5H5r	216.323	1004.2	163.5	1384.02	1510.25	2894.27
10	4E5H5s	788.573	1027.11	13.235	1828.92	4746.68	6575.59
11	4E5H8p	945.362	744.56	126.64	1816.56	4011.33	5827.89
Total		**11093.32**	**6269.69**	**3659.268**	**21022.3**	**54006.1**	**75028.4**

Thus the milliwatersheds selected as L2 landscapes for S.Seoni division have an area of 75028.4 ha. These 11 milli-watersheds are the operational units for implementation of GIM. All the 11 milliwatersheds possess forest as well as non forest area. These 11 milliwatersheds have 67 microwatersheds out of which 47 microwatersheds have forest as well as non forest area whereas remaining 19 microwatersheds are purely in non forest area and 01 microwatershed is completely in forest area .The forest area in the milli –watersheds is largely dense forest which needs measures to supplement natural regeneration.

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI
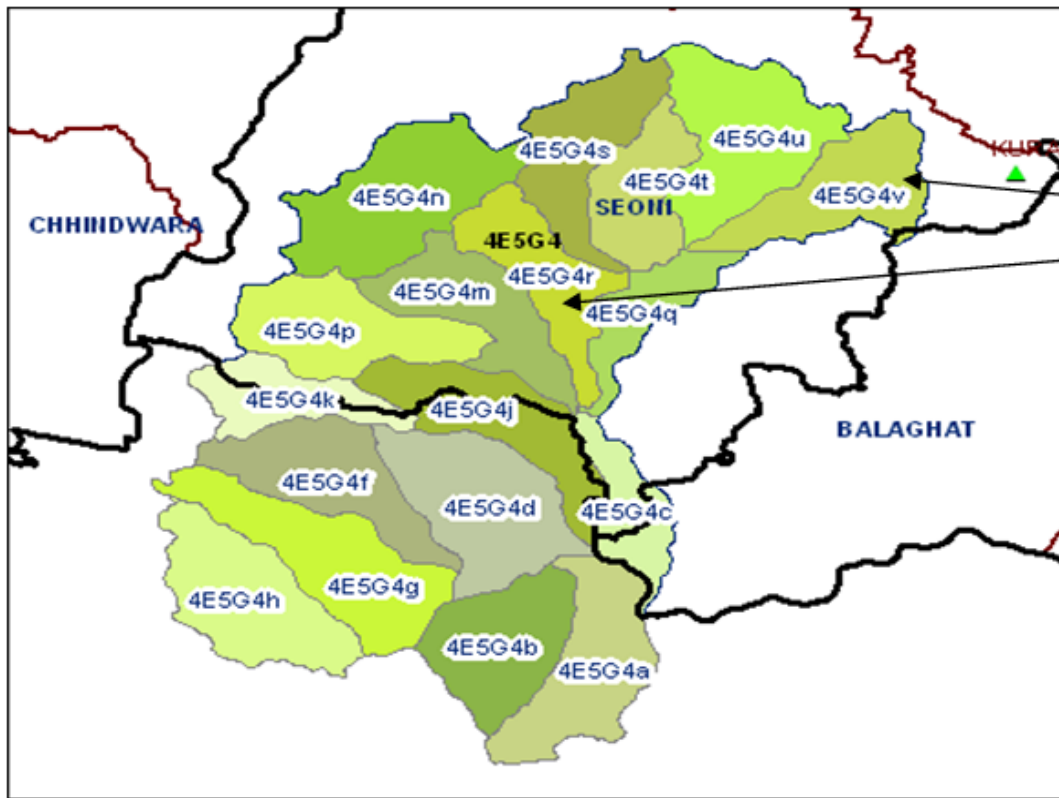
Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SC
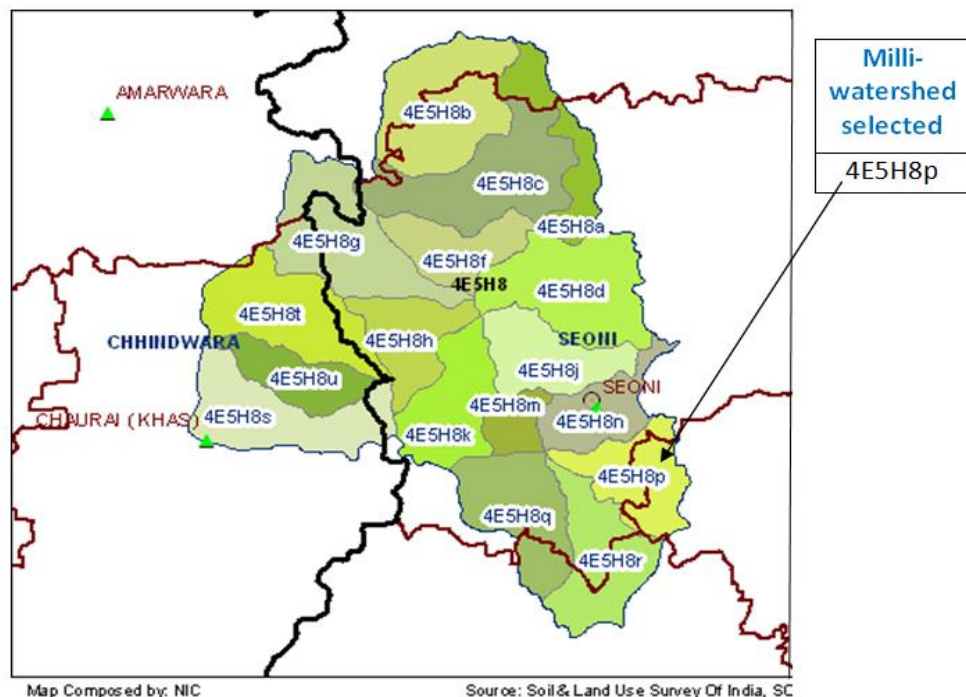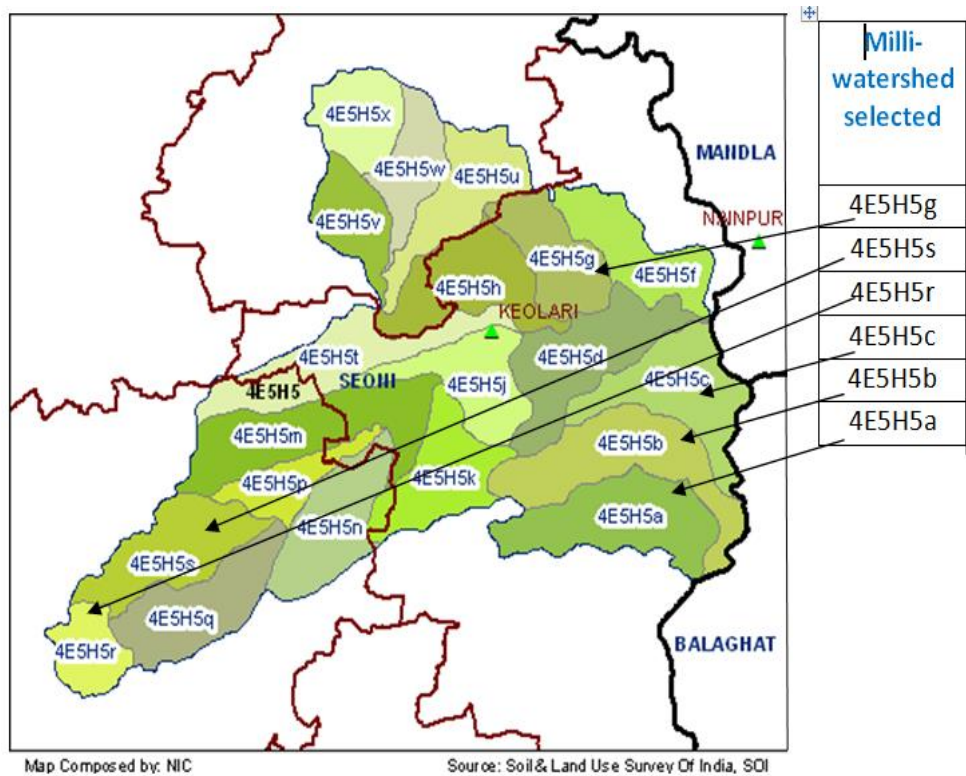
5.5.7 <u>L3 landscapes selected in Seoni District</u>:-

The 11 milli-watershed selected as L2 landscapes comprises of 67 micro-watersheds which are the working unit of the GIM. All the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

5.5.7.1 Milli-watershed no. 4E5H4p:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5H4p1	0	0	0	0	1082.715	1082.715
2.	4E5H4p2	0	0	0	0	1163.181	1163.181
3.	4E5H4p3	0	0	0	0	910.008	910.008
4.	4E5H4p4	0	0	0	0	1145.348	1145.348
5.	4E5H4p5	0	0	0	0	744.985	744.985
6.	4E5H4p6	0	0	0	0	785.268	785.268
7.	4E5H4p7	39.727	141.129	44.043	224.899	727.677	952.576
Total		**39.727**	**141.129**	**44.043**	**224.899**	**6559.182**	**6784.081**

5.5.7.2 Milli-watershed no. 4E5G4r:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G4r1	212.045	142.513	45.639	400.197	619.956	1020.153
2.	4E5G4r2	467.446	46.1	53.63	567.176	383.013	950.189
3.	4E5G4r3	635.927	111.65	44.97	792.547	662.681	1455.228
4.	4E5G4r4	260.991	13.695	7.196	281.882	423.316	705.198
5.	4E5G4r5	0	0	0	0	1206.686	1206.686
6.	4E5G4r6	0	0	0	0	1279.832	1279.832
7.	4E5G4r7	0	0	0	0	899.651	899.651
8.	4E5G4r8	0	0	0	0	1286.264	1286.264
Total		**1576.409**	**313.958**	**151.435**	**2041.802**	**6761.399**	**8803.201**

5.5.7.3 Milli-watershed no. 4E5H4s:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5H4s1	0	0	0	0	682.576	682.576
2.	4E5H4s2	0	0	0	0	1356.517	1356.517
3.	4E5H4s3	0	0	0	0	1390.211	1390.211
4.	4E5H4s4	1.104	47.59	13.812	62.506	1257.349	1319.855
5.	4E5H4s5	11.188	254.425	102.904	368.517	1284.76	1653.277
Total		**12.292**	**302.015**	**116.716**	**431.023**	**5971.413**	**6402.436**

5.5.7.4 Milli-watershed no. 4E5G4v:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5G4v1	19.353	329.296	48.516	397.165	1095.745	1492.91
2.	4E5G4v2	25.389	238.723	5.244	269.356	1530.713	1800.069
3.	4E5G4v3	0.014	46.085	4.418	50.517	1426.823	1477.34
4.	4E5G4v4		11.786		11.786	1209.606	1221.392
5.	4E5G4v5	0	0	0	0	807.579	807.579
6.	4E5G4v6	1.888			1.888	1212.125	1214.013
7.	4E5G4v7		0	0	0	1200.531	1200.531
8.	4E5G4v8	0	0	0	0	1786.836	1786.836
	Total	46.644	625.89	58.178	730.712	10269.96	11000.67

5.5.7.5 Milli-watershed no. 4E5H5a:-

The micro-watershed selecteds in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5H5a1	0	0	155.767	155.767	737.117	892.884
2.	4E5H5a2	0	0	9.972	9.972	1180.126	1190.098
3.	4E5H5a3	77.93	17.01	351.312	446.252	518.364	964.616
4.	4E5H5a4	352.83	0	563.26	916.09	388.289	1304.379
5.	4E5H5a5	208.817	0	48.325	257.142	886.533	1143.675
6.	4E5H5a6	240.552	13.024	354.225	607.801	508.045	1115.846
7.	4E5H5a7	778.218	75.091	0.004	853.313	0	853.313
	Total	1658.347	105.125	1482.86	3246.337	4218.474	7464.811

5.5.7.6 Milli-watershed no. 4E5H5b:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5H5b1	0	0	0	0	774.463	801.042
2.	4E5H5b2	0	0	1.744	1.744	1266.825	1283.125
3.	4E5H5b3	311.176	158.694	20.592	490.462	1178.247	1668.709
4.	4E5H5b4	868.546	378.243	21.91	1268.699	156.787	1425.486
5.	4E5H5b5	716.693	159.067	15.192	890.952	70.706	961.658
6.	4E5H5b6	717.649	21.268	0	738.917	222.467	961.384
7.	4E5H5b7	592.615	116.253	0	708.868	331.553	1040.421
	Total	3206.679	848.081	86.017	4140.777	4001.048	8141.825

5.5.7.7 Milli-watershed no. 4E5H5c:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5H5c1	0	21.046	7.452	28.498	877.884	906.382
2.	4E5H5c2	410.653	347.811	10.931	769.395	329.299	1098.694
3.	4E5H5c3	728.1	106.038	649.922	1484.06	136.45	1620.51
4.	4E5H5c4	678.249	357.73	1.728	1037.707	192.895	1230.602
5.	4E5H5c5	450.991	134.036	451.714	1036.741	651.655	1688.396
	Total	**2267.993**	**966.661**	**1121.747**	**4356.401**	**2188.183**	**6544.584**

5.5.7.8 Milli-watershed no. 4E5H5g:-

The micro-watershed selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5H5g1	0	0	79.232	79.232	742.277	821.509
2.	4E5H5g2	0	0	78.057	78.057	694.936	772.993
3.	4E5H5g3	0	0	70.565	70.565	751.134	821.699
4.	4E5H5g4	0	0	31.161	31.161	563.332	594.493
5.	4E5H5g5	327.559	142.655	8.682	478.896	473.421	952.317
6.	4E5H5g6	7.412	48.302	27.239	82.953	543.041	625.994
	Total	**334.971**	**190.957**	**294.936**	**820.864**	**3768.141**	**4589.005**

5.5.7.9 Milli-watershed no. 4E5H5r:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5H5r1	18.857	157.892	27.635	204.384	799.585	1003.969
2.	4E5H5r2	52.723	471.356	57.249	581.328	399.113	980.441
3.	4E5H5r3	144.743	374.948	78.619	598.31	311.547	909.857
	Total	**216.323**	**1004.196**	**163.503**	**1384.022**	**1510.245**	**2894.267**

5.5.7.10 Milli-watershed no. 4E5H5s:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5H5s1	0	0	0	0	1331.406	1331.406
2.	4E5H5s2	274.882	115.409	0	390.291	998.302	1388.593
3.	4E5H5s3	0	64.683	0	64.683	1323.91	1388.593
4.	4E5H5s4	224.848	328.709	5.147	558.704	745.795	1304.499
5.	4E5H5s5	288.843	518.307	8.088	815.238	347.262	1162.5
	Total	**788.573**	**1027.108**	**13.235**	**1828.916**	**4746.675**	**6575.591**

5.5.7.11 Milli-watershed no. 4E5H8p:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	4E5H8p1	0	0	0	0	684.078	684.078
2.	4E5H8p2	149.484	80.439	0.757	230.68	536.803	767.483
3.	4E5H8p3	124.418	72.735	16.554	213.707	595.426	809.133
4.	4E5H8p4	59.869	124.661	25.035	209.565	884.169	1093.734
5.	4E5H8p5	579.296	352.665	2.876	934.837	303.117	1237.954
6.	4E5H8p6	32.295	114.06	81.415	227.77	1007.734	1235.504
	Total	**945.362**	**744.56**	**126.637**	**1816.559**	**4011.327**	**5827.886**

5.5.8 Reason for selection of L2 landscapes:-

- The selected L2 landscape are representative of a large tract of central India Teak dominated Tropical dry deciduous forests which are suitable habitat for Tiger.

- Due to biotic pressure floral biodiversity is getting reduced. It is affecting regeneration of important species.

- There is soil erosion in sloppy areas, loss of regeneration due to repeated forest fire, growth of obnoxious weeds. These are affecting floral biodiversity.

- Most of the people living in the vicinity of forest are Schedule tribes and most of them are very poor living below poverty line.

- Large area within L2 landscape is under stocked and dense vegetation need to be reclaimed with improvement activities.

- Bamboo forest in the area is under severe pressure and needs special attention.

- Forest dwellers adopting uncontrolled and unskilled methods for collection of NTFP resulting in the decreased production of NTFP in the area.

- Shrinking water sources.

- Area falling in the crucial Pench –Kanha wildlife corridor.

- Preperatory activities for GIM were undertaken in South Seoni Division.

5.5.9 Possible solutions to enhance forest cover, improve ecosystem services and address the drivers of degradations:-

- Enhancement of forest cover in forest and non forest land.

- Improvement of quality of dense forest by assisting natural regeneration.

- Protection and enrichment of bamboo forest by under planting of bamboo.

- Restoration of degraded and open forest.

- Restoration of grasslands.

- Restoration of wet lands.

- Income generating activities like dairy, poultry and other cottage industry to be assisted.

- Encourage local villagers for plantation of fruit trees and bamboo in their field; this will not only increase the tree cover but also enhance their economy also.

- Raising fuel and fodder plantation in village area also to decrease dependency of local villagers on forest.

-Soil water conservation works in village as well as forest area on extensive basis to raise the water level of the area and to improve water availability for wild animals in the forest area .

5.5.10 Proposed interventions:-

- Strengthening of Forest department and JFMCs by organizing JFMC level and Division level workshop and training program and awareness generation on GIM. Training will be provided to field staff and members on PRA micro-planning, watch and ward activities and on establishing convergence.

- Capacity building of young and educated youth members of JFMCs in forest protection and management aspects.

- Protection and maintenance activities-The maintenance and protection of existing forest cover is as much important as the encouraging new plantation and treatment of degraded area. Peoples participation to be ensured in this objective.

5.5.11 Cross cutting interventions proposed:-

- Promoting alternative energy sources.

- Encouragement for non destructive harvesting of NTFP.

5.5.12 Livelihood improvement activities proposed:-

Dairy farming, NTFP based livelihoods, skill upgradation trainings, Poultry farming,lac cultivation to be strengthened.

5.5.13 Area proposed to be treated under different sub missions in Seoni District:-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
	Submission 1 (a) Moderately dense forest cover, but showing degradation	3522	3400	3044	0	0	9966
	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	682	677	663	0	0	2022
	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	219	201	198	0	0	618
	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	125	114	112	0	0	351
	Submission 1 (c) Restoration of grasslands	45	44	40	0	0	129
	Submission 3(a) Plantation in urban and peri urban areas	6	5	4	0	0	15
	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	2612	2524	2400	0	0	7536
	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	582	571	569	0	0	1722
	Submission 5 Restoration of wetlands	25	20	15	0	0	60
	Total	**7818**	**7556**	**7045**	**0**	**0**	**22419**

Thus a total 22419 ha. of the land is proposed to be treated during the project period. Since most of the area is dense forest, the maximum emphasis has been given to Submission 1 (a) Moderately dense forest cover but showing degradation .This component will provide assistance to

natural bamboo forest also. There are certain old wet lands in the division whose restoration work would be taken up.To enhance tree cover in non forest area a large component of agroforestry has been included in the project.

5.5.14 Budget for Seoni district:-

Submission wise budget summary for Seoni district is given below-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	1829.17	60.06	661.23	2550.46
2017-18	3703.38	47.817	1312.92	5064.11
2018-19	4519.45	36.531	1594.59	6150.58
2019-20	3066.35	26.004	1082.32	4174.68
2020-21	1516.90	15.609	536.38	2068.88
Total	**14635.25**	**186.02**	**5187.44**	**20008.71**

A total sum of Rs 200.08 cr. has been proposed for the project.

Details of budget for South Seoni Division is given in given Annexure v.

5.6 Landscape Plan Betul District

Betul is one of the southern districts of Madhya Pradesh which form boundary with Maharastra state. This district lies almost wholly in the Satpura Plateau.
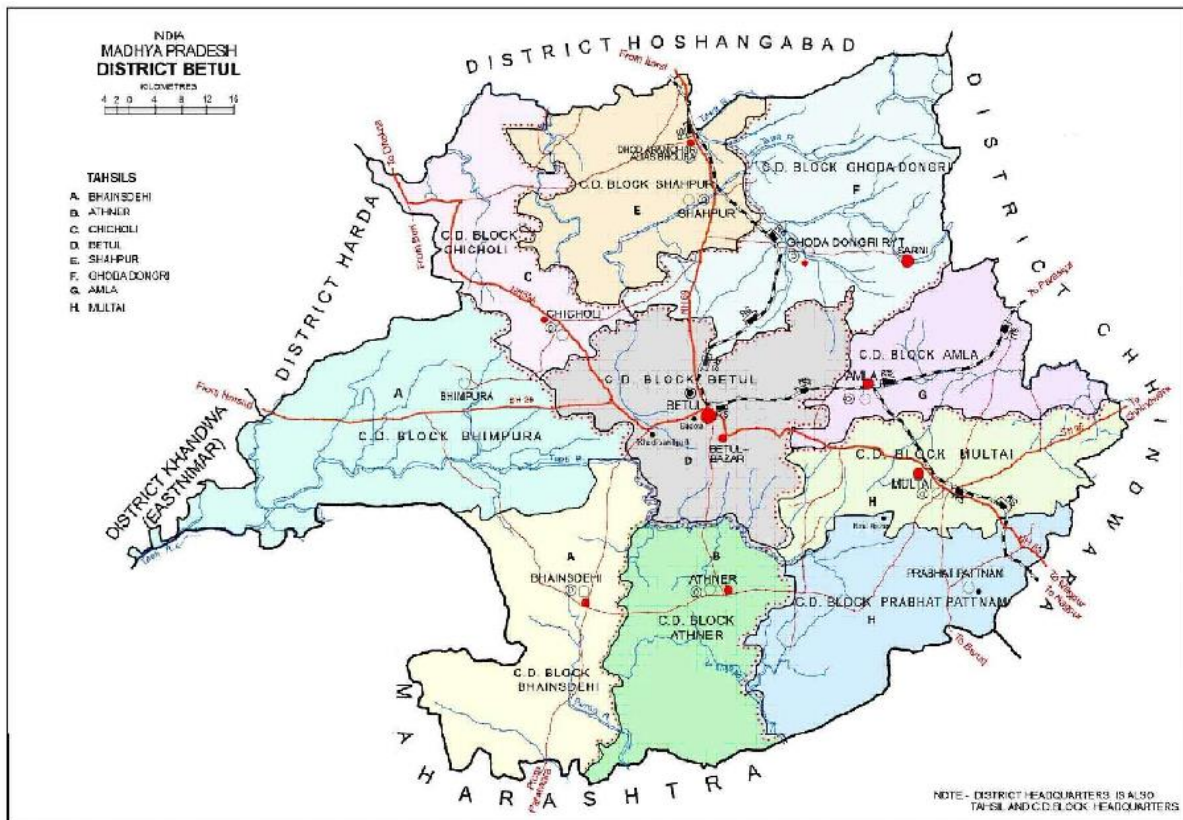
It occupies nearly the whole width of the Satpura ranges between the valley of Narmada on the north and the bearer plains on the south. Being located on Satpura hill range, the terrain is hilly with small hillocks spread all over. The district extends between $21^0 22'$ to $22^0 24'$ north latitude and $77^0 10'$ to $78^0 33'$ east longitude and forms a compact shape, almost a square with slight projection on east and the west. The altitude ranges between 353 meter above mean sea level to 1078 meter above mean sea level. The country is essentially a highland tract, divided naturally into three distinct portions, differing in their superficial aspects, the character of their soil and their geological formation. The northern part of the district forms an irregular plain of the sandstone formation. It is a well-wooded tract, which has a very sparse population and little cultivated land. In the extreme north a line of hills rises abruptly out of the great plain of the Narmada valley. The central tract alone possesses a rich soil, well watered by the Machna River and Sapna dam, almost entirely cultivated and studded with villages. To the south lies a rolling plateau of basaltic formation (with the sacred town of Multai, and the springs of the Tapti River at its highest point), extending over the whole of the southern face of the district, and finally merging into the wild and broken line of the Ghats, which lead down to the plains. This tract consists of a succession of stony ridges of trap rock, enclosing valleys of basins of fertile soil. The climate of Betul is fairly healthy. Its height above the plains and the neighborhood of extensive forests moderate the heat, and render the temperature pleasant throughout the greater part of the year. During the cold season the thermometer at night falls below the freezing point, little or no hot wind is felt before the end of April and even then it ceases after sunset. The nights in the hot season are comparatively cool and pleasant. During the monsoon the climate is very damp and at times even

cold and raw, thick clouds and mist enveloping the sky for many days together. Average temperature varies from 10^0 c in winter to 41^0 c dry summer. The average annual rainfall is 1100 mm.

The major rivers flowing in the district are the Ganjal River (a tributary of the Tapti River), and the Morand River and the Tawa River (tributaries of the Narmada River). The Tapti River originates from Multai in the Betul district. Betul district possesses large coal reserves and is known for Northern Coal Field Limited mines at Patha Kheda. Soil is basically sandy, red murram, clay loam and black soil.Due to abundance of forest in the district, there are three territorial forest divisions in the district namely North, South & West territorial forest division and one Forest Development Corporation is also there. For the purpose of GIM, L2 landscapes have been selected in North territorial forest division and West territorial forest division of Betul district.

5.6.1 Forest:-

Forest of Betul district are mainly teak forest belonging to Southern Tropical Dry Deciduous Teak Forest class. Other than this mixed forest of Southern Tropical Dry Deciduous Mixed Forest class are also present in the district. Forest density ranges from 0.2 to 0.8 and major species are Teak, Saja, Dhawda, Baheda, Mahua, Salai, Lendia, Moyan, Tendu, Palash etc. At many places teak and mixed forest are interspread with Bamboo species. The area wise distribution of the forest is as follows:-

Area in sq.km.

Division	RF	PF	other	Total
North Betul	1011.89	163.75	16.10	1191.74
West Betul	600.51	223.35	150.21	974.07

5.6.2 Wildlife:-

Forest of Betul district provide a safe habitat for various wild animals. Machna, Tapti and other river possesses water throughout the year at many places which caters to the need of wild animals. The crucial wildlife corridor between Satpura and Melaghat Tiger Reserve also passes through the forests of Betul district. The prominent wild animals found in the forest of Betul district are Tiger, Leopard, Bison, Sloth bear, Spotted dear, Neelgai, wild boar, hyena etc.

5.6.3 Dependence on forest:-

There are 1344 villages in the district, out of which 1206 villages are situated with 5 km. radius of the forest boundary. Large number of population is dependent on forest for their basic needs of fuel wood, fodder, timber and bamboo. As per working plan estimates the annual requirement of the district is as follows:-

Sr. No.	Item	Annual Requirement
1.	Timber	102975 cmt.
2.	Fuel wood	561426 cmt.
3.	Bamboo	4143570 no.

For most of the requirement of timber, fuel wood and bamboo people are dependent on forest area. Similarly for fodder requirement also the villages are dependent on forest. In Betul district as per working plan estimate there are 1091953 cattles which make 11,66,258 cattle units, where as the grazing carrying capacity of the forest is just 424146 cattle units. Thus the grazing pressure on forest is almost 3 times of the carrying capacity.

5.6.4 Joint Forest Management:-

There are 1344 revenue villages in the district out of which 1206 villages lie in the periphery of 5 km. from forest boundary. The inhabitants of these villages have a very important role in the protection of forest. To ensure their active participation in the management of forest total 642 joint forest management committees have been constituted in the district. In North Betul division there are 174 JFMCs(160 Forest Protection Committees and 14 Village Forest Committees) where as in West Betul division there are 165 JFMCs(141 Forest Protection Committees and 24 Village Forest Committees).In North Betul 1108.26 sq. km. and in West Betul 962.35 sq. km. area has been assigned to these JFMCs

5.6.5 Demography:-

As per2011 the census data of the district are as follows:-

Total area of the district		10043 sq.km.
Literacy rate		68.9%
No. of villages		1344
No. of households		328484
Population	Rural	640358
	Urban	309151
	Total	1575362
Population	Male	799236
	Female	776126
	Total	1575362
Scheduled caste population		159296
Scheduled tribe population		667018

Scheduled Caste form 10.11% and Scheduled Tribe form 42.34% of the population of the district. The Betul is predominantly a tribal district. Main tribes are Gond and Korku. About 46% of the worker population i.e. 3,58,157 people work as agriculture laborers.

5.6.6 L-2 Landscapes selected in Betul District:-

Following 4 milli watershed of the North Betul Division and 8 milli watersheds of West Betul Divisions have been selected as L2 landscapes:-

North Betul Division

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1	5D5A2d	1648.64	269.096	15.645	1933.38	2062.22	3995.6
2	5D5A2g	1151.165	481.67	369.579	2002.414	940.551	2942.97
3	5D5A2h	3622.99	1063.96	754.283	5441.23	4139.34	9580.58
4	5D5A2j	4073.53	696.507	835.679	5605.71	5735.51	11341.2
Total		**10496.32**	**2511.24**	**1975.19**	**14982.73**	**12877.62**	**27860.4**
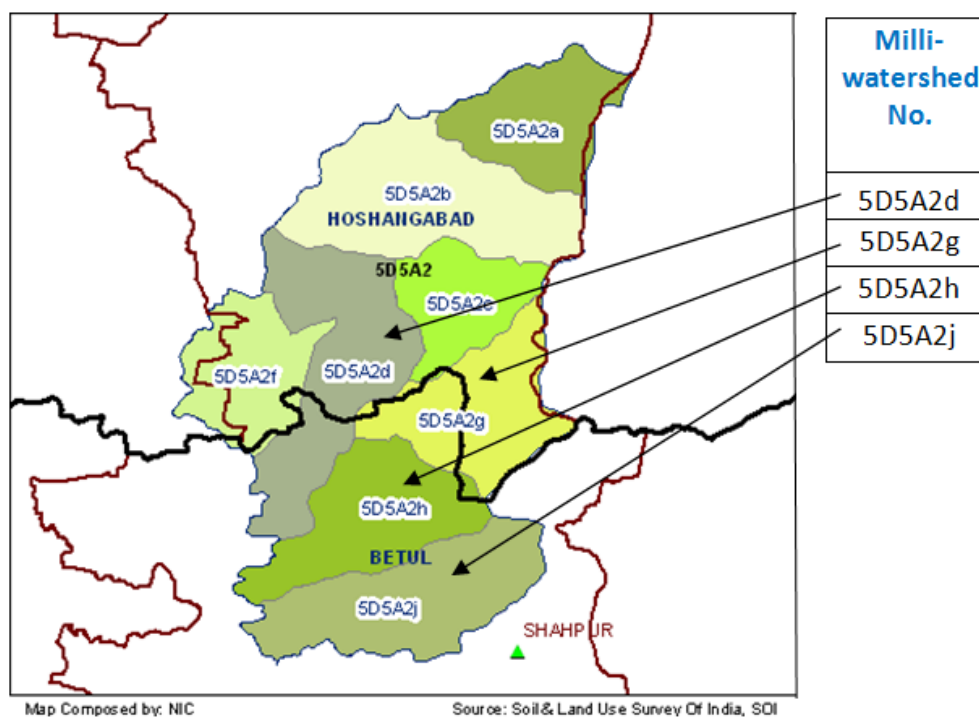
West Betul Division

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5C5B5q	1712.93	244.188	63.434	2020.553	515.246	2535.799
2.	5C5B5r	3341.864	497.276	138.637	3977.777	635.452	4613.229
3.	5C5B5s	2192.791	330.053	217.113	2739.957	502.764	3242.721
4.	5C5B5t	2535.492	381.405	30.238	2947.135	200.502	3147.637
5.	5C5B5v	3293.219	161.221	361.003	3815.443	340.016	4155.459
6.	5C5B5w	2513.209	440.668	457.804	3411.681	627.738	4039.419
7.	5C5B5x	1857.713	323.268	88.472	2269.453	1242.797	3512.25
8.	5C5B5y	3310.084	100.958	395.244	3805.968	30.722	3836.69
Total		**20757.30**	**2479.037**	**1751.945**	**24987.97**	**4095.237**	**29083.2**

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI
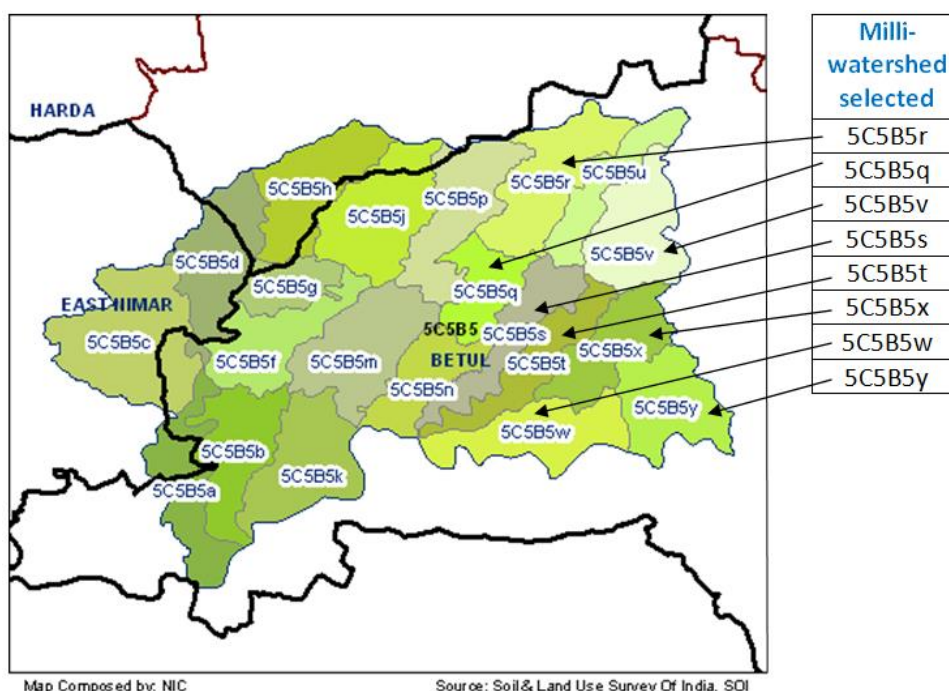
Thus the milliwatersheds selected as L2 landscapes in N. Betul division have an area of 27860.36 ha. and landscapes of W. Betul division have an area of 29083.2 ha. The total area of the 12 landscapes selected in the district thus becomes 56943.56 ha. These 12 milli-watersheds are the operational units for implementation of GIM. All the 12 milliwatersheds possess forest as well as non forest area. These 12 milliwatersheds have 44 microwatersheds out of which 35 microwatersheds have forest as well as non forest area whereas remaining 09 microwatersheds are almost completely in forest area .The forest area in the milli –watersheds is largely dense forest which needs measures to supplement natural regeneration.

5.6.7   L3 landscapes selected in Betul District:-

The 12 milli-watershed selected as L2 landscapes have further been divided into total 44 micro-watersheds which are the working unit of the GIM. All the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

North Betul Division

5.6.7.1 Milli-watershed no. 5D5A2d:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	**Open Forest**	**Blank Forest**	**Total**		
1.	5D5A2d3	7.009	0.11	0	7.119	479.307	486.426
2.	5D5A2d4	528.573	74.454	0	603.027	416.081	1019.108
3.	5D5A2d5	1113.054	194.532	15.645	1323.231	1166.83	2490.061
	Total	**1648.636**	**269.096**	**15.645**	**1933.377**	**2062.218**	**3995.595**

5.6.7.2 Milli-watershed no. 5D5A2g:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D5A2g1	232.236	129.711	263.642	625.589	0.0	625.589
2.	5D5A2g2	784.736	326.493	105.937	1217.166	471.847	1689.013
3.	5D5A2g5	134.193	25.466	0	159.659	468.704	628.363
	Total	1151.165	481.67	369.579	2002.414	940.551	2942.965

5.6.7.3 Milli-watershed no. 5D5A2h:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D5A2h1	255.482	189.769	36.281	481.532	1140.995	1622.527
2.	5D5A2h2	666.655	527.051	36.227	1229.933	748.663	1978.596
3.	5D5A2h3	173.385	58.486	23.24	255.111	1020.997	1276.108
4.	5D5A2h4	447.434	83.593	42.787	573.814	706.29	1280.104
5.	5D5A2h5	1074.188	115.167	265.399	1454.754	372.132	1826.886
6.	5D5A2h6	1005.845	89.896	350.349	1446.09	150.266	1596.356
	Total	3622.989	1063.962	754.283	5441.234	4139.343	9580.577

5.6.7.4 Milli-watershed no. 5D5A2j:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D5A2j1	0	6.91	41.431	48.341	1175.782	1224.123
2.	5D5A2j2	60.959	1.243	26.126	88.328	1142.923	1231.251
3.	5D5A2j3	370.465	79.276	1.292	451.033	588.41	1039.443
4.	5D5A2j4	260.735	99.525	71.494	431.754	675.655	1107.409
5.	5D5A2j5	756.901	95.7	8.436	861.037	1001.959	1862.996
6.	5D5A2j6	637.04	107.078	36.761	780.879	696.174	1477.053
7.	5D5A2j7	676.554	264.661	346.502	1287.717	454.121	1741.838
8.	5D5A2j8	1310.874	42.114	303.637	1656.625	0.485	1657.11
	Total	4073.528	696.507	835.679	5605.714	5735.509	11341.22

West Betul Division

5.6.7.5 Milli-watershed no. 5C5B5q:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5C5B5q1	726.746	139.571	35.912	902.229	442.911	1345.14
2.	5C5B5q2	986.185	104.617	27.522	1118.32	72.34	1190.66
	Total	**1712.93**	**244.188**	**63.434**	**2020.55**	**515.251**	**2535.8**

5.6.7.6 Milli-watershed no. 5C5B5r:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5C5B5r1	871.373	168.691	72.97	1113.034	230.522	1343.556
2.	5C5B5r2	1238.609	149.831	2.637	1391.077	255.598	1646.675
3.	5C5B5r3	1231.882	178.754	63.03	1473.666	149.332	1622.998
	Total	**3341.864**	**497.276**	**138.637**	**3977.777**	**635.452**	**4613.229**

5.6.7.7 Milli-watershed no. 5C5B5s:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5C5B5s1	492.227	87.087	48.134	627.448	446.796	1074.244
2.	5C5B5s2	716.04	194.545	11.58	922.165	56.34	978.505
3.	5C5B5s3	984.524	48.421	157.02	1189.97	0	1189.972
	Total	**2192.791**	**330.053**	**217.113**	**2739.957**	**502.764**	**3242.721**

5.6.7.8 Milli-watershed no. 5C5B5t :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5C5B5t1	674.222	125.032	0	799.254	189.968	989.222
2.	5C5B5t2	772.368	232.417	6.155	1010.94	0	1010.94
3.	5C5B5t3	1081.514	23.956	24.083	1129.553	17.922	1147.475
	Total	**2535.492**	**381.405**	**30.238**	**2947.135**	**200.502**	**3147.637**

5.6.7.9 Milli-watershed no. 5C5B5v:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5C5B5v1	827.512	38.074	77.302	942.888	199.118	1142.006
2.	5C5B5v2	1325.332	83.663	148.846	1557.841	0	1557.841
3.	5C5B5v3	1140.375	37.994	134.855	1313.224	142.388	1455.612
Total		**3293.219**	**161.221**	**361.003**	**3815.443**	**340.016**	**4155.459**

5.6.7.10 Milli-watershed no. 5C5B5w:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5C5B5w1	725.568	139.516	71.776	936.86	508.379	1445.239
2.	5C5B5w2	693.524	183.39	140.897	1017.811	2.031	1019.842
3.	5C5B5w3	1094.117	117.762	245.131	1457.01	117.328	1574.338
Total		**2513.209**	**440.668**	**457.804**	**3411.681**	**627.738**	**4039.419**

5.6.7.11 Milli-watershed no. 5C5B5x:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5C5B5x1	851.50	220.743	16.063	1088.31	0	1088.311
2.	5C5B5x2	663.945	92.053	56.281	812.279	615.218	1427.497
3.	5C5B5x3	339.26	10.472	16.128	365.86	630.582	996.442
Total		**1857.713**	**323.268**	**88.472**	**2269.453**	**1242.797**	**3512.25**

5.6.7.12 Milli-watershed no. 5C5B5y :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5C5B5y1	742.768	32.398	143.615	918.781	30.722	949.503
2.	5C5B5y2	999.352	11.116	12.103	1022.253	0	1022.253
3.	5C5B5y3	901.935	24.657	189.81	1116.402	0	1116.402
4.	5C5B5y4	666.029	32.787	49.716	748.532	0	748.532
Total		**3310.084**	**100.958**	**395.244**	**3805.968**	**30.722**	**3836.69**

5.6.8 Reason for selection of L2 landscapes:-

- Large forest dependent Tribal population living in the area. Mostly Scheduled area with dominant tribal population. The level of dependence on forest is high.
- Good forest area with fragmented patches subject to degradation in long run.
- Area falls in wild life corridor between Satpura and Melghat Tiger Reserve.
- Forests are subjected to illicit felling for livelihood & personal consumption.
- Area subjected to excessive grazing and fire damaging the natural regeneration.
- Malpractices for collection of NTFP species are prevalent in the area.
-The area is ecological important area and falls in the catchment area of perennial rivers Nishana and Tapti.The area comes in the Biodiversity rich area under central highlands.
- Landscape is biodiversity rich area - The area contains endangered plant as well as animal species.
- The livelihood opportunities are less. There are no industries working in the area. Income from Agriculture is meager.
- Preperatory activities for GIM were undertaken in North Betul Division.

5.6.9 Possible solutions to enhance forest cover,improve ecosystem services and address the drivers of degradations:-

- Enhancement of forest cover by plantations in open areas in the forest land and plantations on agricultural land.
- Assisted Natural Regeneration.
- Soil and moisture conservation based on watershed treatment methodology.
- Promoting the use of alternate energy sources to reduce dependence on forest produces.
- Grassland development & promoting improved breeds of cattle as well as encouraging the villagers for stall feeding.
- Effective fire protection awareness among the people.
- Promotion of income generation activities.
- Awareness generation for sustainable methods of NTFP collection.

5.6.10 Proposed interventions:-

- Skill upgradation programme and training to be organized at JFMC level.
- Capacity building of forest staff by organizing Range and Division level workshop and training program.
- Young and educated youth of JFMCs to be encouraged to participate more and more in forestry activities.
- Protection and maintenance activities to conserve the existing biodiversity.
- Sustainable harvesting of NTFP to be encouraged.

5.6.11 Cross cutting interventions proposed:-

- Improving fuel-wood efficiency and promoting alternative energy sources.
- Promotion of energy efficient devices.

5.6.12 Livelihood improvement activities proposed:-Livelihood opportunities -Various livelihood activities such as Dairy Farming, NTFP based livelihoods, Poultry farming, Dona pattal manufacturing, tusser silk rearing and Fisheries will be taken up in the project villages.

5.6.13 Area proposed to be treated under different sub missions in Betul District:-

North Betul Division-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	3345	3155	3100	0	0	9600
2.	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	320	310	300	0	0	930
3.	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	210	195	165	0	0	570
4.	Submission 3(a) Plantation in urban and peri urban areas	6	6	3	0	0	15
5.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	745	725	705	0	0	2175
6.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	165	152	148	0	0	465
	Total	**4791**	**4543**	**4421**	**0**	**0**	**13755**

West Betul Division:-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	5770	5770	5770	0	0	17310
2.	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	25	25	25	0	0	75
3.	Submission 3(a) Plantation in urban and peri urban areas	10	8	6	0	0	24
4.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	120	120	120	0	0	360
5.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	25	25	25	0	0	75
	Total	**5950**	**5948**	**5946**	**0**	**0**	**17844**

Thus in N.Betul 13755 ha. and in W. Betul 17844 ha. area is proposed to be treated under the project .Most of the area being proposed for treatment belongs to Submission 1 (a) Moderately dense forest cover, but showing degradation.

5.6.14 **Budget for Betul district:-**

Submission wise budget summary for North Betul district is given below-

North Betul

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	1027.75	79.53	387.55	1494.83
2017-18	2059.22	66.99	744.17	2870.38
2018-19	2512.96	55.77	899.06	3467.79
2019-20	1709.76	43.56	613.66	2366.99
2020-21	844.78	31.185	306.59	1182.56
Total	**8154.48**	**277.04**	**2951.03**	**11382.54**

West Betul

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	972.58	34.386	352.44	1359.40
2017-18	2003.61	30.096	711.80	2745.51
2018-19	2531.14	25.74	894.91	3451.78
2019-20	1732.85	22.275	614.29	2369.42
2020-21	848.64	18.777	303.60	1171.01
Total	**8088.82**	**131.27**	**2877.03**	**11097.12**

During the project period it is proposed to carry out various works costing Rs 113.82cr. in North Betul and Rs 110.97 cr. in West Betul Division.

Details of budget for Betul North Division is given in given Annexure vi and for Betul West Division in Annexure vii.

5.7 Landscape Plan Raisen District

Raisen district lies in the central part of Madhya Pradesh. The district is situated between 22^0 47' to 23^0 33' north latitude and 77^0 21' to 78^0 49' east longitude.
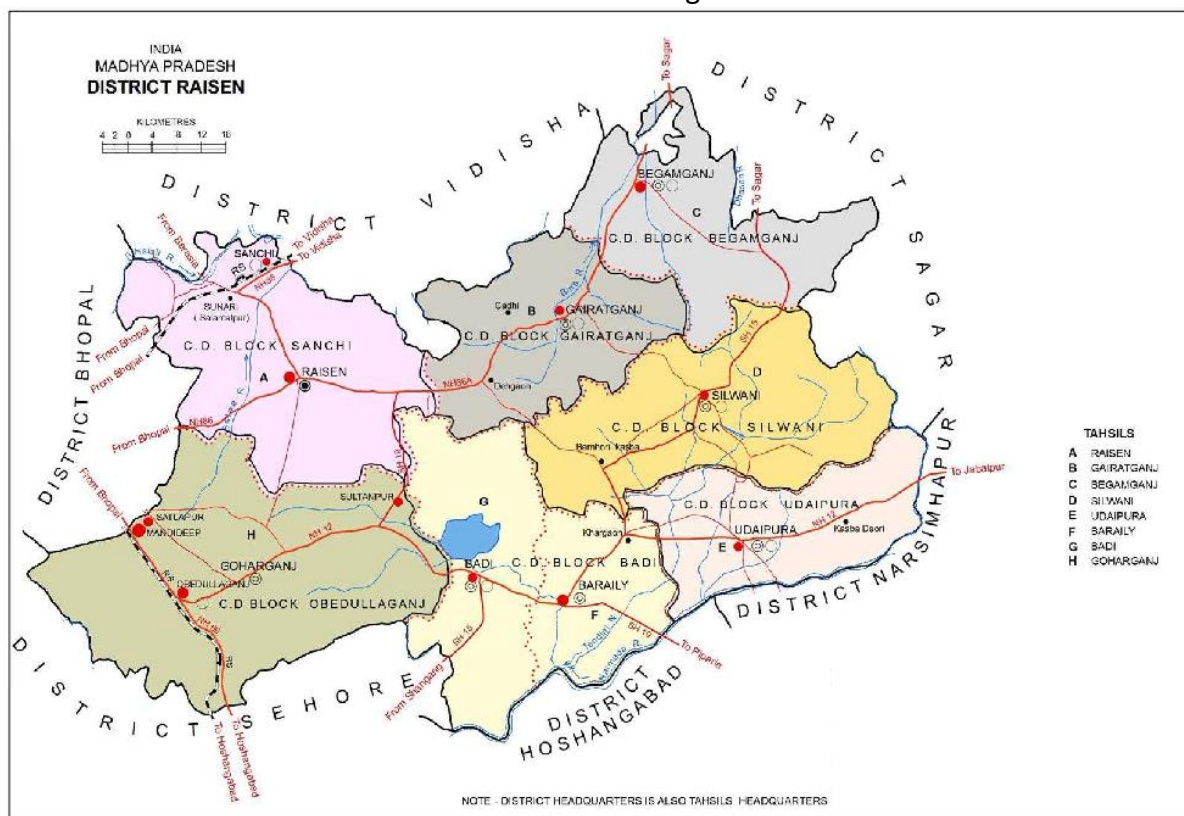
Most of the terrain of the district is full of undulating hills. Vindhyanchal mountain range covers the whole district. These hill ranges divide the district into two drainage patterns .The northern part ultimately drains into Yamuna whereas the southern part drains into Narmada. Betwa, Halali, Beena, Bebas and Tenduni rivers are the prominent rivers. Since most of the river courses fall in the hilly area, they become dry towards the end of the winter season. Only in few pockets of the river courses water is found in the summer season. Based on the geographical features the district can be divided in following three major segments:-

1. Malwa Plateau:- The fertile area is enclosed by vindhyan hill ranges where elevation is from 400 m. to 520 m. above mean sea level.
2. Vindhyan Hills:- This is mostly sandstone area where elevation is from 530 m. to 674 m. above mean sea level.
3. Narmada Valley:- Created by Narmada and its tributaries , this plain land is very fertile.

Main geological formation is Deccan trap, Vindhyan and Laterite. Black soil is found over the Deccan trap Basalt area whereas alluvial soil is present on the river banks. The average daily temperature is from 25.2^0c to 33.5^0c .The maximum temperature goes up to 44.5^0 c during summer. The average rainfall is 1118 mm.

In Raisen district there are two territorial forest divisions and two wild life sanctuaries .These are Raisen territorial division, Obedullaganj territorial division and Ratapani and Singhori wild life Sanctuary. For the purpose of Green India Mission, Raisen and Obedullaganj territorial division have been selected.

5.7.1 Forest:-

Forests are mainly of Southern Tropical Dry Deciduous type. Mainly teak and mixed forests are found. In the teak forest main species is teak and the other associates are Saja, Dhawda, Lendia, Palas,

Tendu, Achar, Aonla, Salai, Kari, Mahua, Kullu etc. Sirali, Ber, Dudhi, Bekal, Marorphalli and Karonda are main shrub species. Pure bamboo forests are not found in the area while degraded bamboo forests are present as under storey in teak and mixed forest. Bamboo forests are found mainly in hill areas and in slopes. Only one species of bamboo i.e. Dendrocalamus strictus is found in bamboo forests. Due to excessive grazing and biological pressure bamboo forests have become degraded. Mixed forests are found in patches with teak forest. The main species of mixed forests are Dhawda, Saja, Aonla, Tendu, Kullu, Palas, Mahua, Bahera etc.

The area wise distribution of forest is as follows:-

Division	Reserve forest	Protected forest	Unclassified forest	Total(ha.)
Raisen	104384.12	71232.79	2176.94	177793.85
Obedullaganj	45032.58	20587.04	0	65619.62
Total	**149416.7**	**91819.83**	**2176.94**	**243413.47**

5.7.2 Wildlife :-

Different topographical formation available in the district provide suitable habitat for wide range of wild animals. The district possesses an excellent Protected area in the form of Ratapani Wildlife sanctuary which has developed into a prominent Tiger habitat of the State. The selected two territorial divisions also have presence of Tiger. The other wild animals reported in the district are Leopard, Chittal, Sambhar, Hyena, Barking deer, Black buck, Chinkara, Neelgai etc. Black buck and Neelgai are habitual of roaming in open area and causes lot of crop depredation.

5.7.3 Dependence onForest :-

There are 808 villages in Raisen division located within 5 km distance from the forest. Similarly there are 292 villages in Obedullaganj division lying within 5 km periphery of the forest boundary . Thus most of the villages in these two forest divisions are situated near forest which shows the biotic pressure on the forests of these divisions. As per working plan estimates annual requirment of the forest produce in these two divisions are as follows:-

Division	Fuel wood	Timber	Bamboo
Raisen	2234251 Qt.	17929 cmt	64890 no.
Obedullaganj	109903 Qt	2432 cmt	398726 no.
Total	**2344154 qt**	**20361 cmt**	**463616 no.**

Apart from this the grazing pressure in these divisions is as follows:-

Division	Cattle population	Cattle Unit	Carrying Capacity (in cattle unit)
Raisen	618752	694247	282397
Obedullaganj	134962	167352	86206
Total	**733754**	**861699**	**368603**

Thus the cattle population in these divisions is quite high as compared to the grazing carrying capacity which reflects the amount of grazing pressure on the forest land because for most of the grazing requirement villagers depend on the forest. The practice of stall feeding is rare and most of the unproductive cattle are sent to forest for grazing. Tendu Patta is major minor forest produce in these divisions where large number of people are involved in the collection work. Other important MFP are Mahua, Achar, Aonla, Honey, Mahul and Palas Leaves. In Raisen division sand stone is present at many

places, which exposes these areas to illegal mining also. In some places of Garhi Shodarpur and Deori people are involved in cultivation of Pan (Betel) leaves which require bamboo to support it.

5.7.4 Joint Forest Management:-

There are 808 villages in Raisen division and 292 villages in Obedullaganj division which are located in a periphery of 5 km. from forest. The activity of these villages have direct impact on forest. So to ensure their cooperation in forest protection and management, following JFMCs have been constituted in these divisions :-

Division	Forest protection committee	Village forest committee	Eco development committee	Total
Raisen	191	205	-	396
Obedullaganj	47	44	85	176
Total	**238**	**249**	**85**	**572**

Eco development committees have been constituted in the villages lying near Ratapani Sanctuary and Singhori wild life sanctuary situated in Raisen district. About 3260.42 sq. km. forest area has been assigned to these JFMCs.

5.7.5 Demography :-

As per2011 the census data of the district are as follows:-

Total area of the district		8466 Sq Km
Literacy rate		73 %
No. of villages		1424
No. of households		276961
Population	Rural	1028172
	Urban	303425
	Total	1331597
Population	Male	700358
	Female	631239
	Total	1331597
Scheduled caste population		225891
Scheduled tribe population		205006

Scheduled caste from about 16.96 and Scheduled tribe from about 15.40% of the total population. About 44.06% of the worker population which is 228151 works as agricultural labourers.

5.7.6 L-2 Landscapes selected in Raisen District:-

Following 10 milli watershed of Raisen Division and 10 milliwatersheds of Obedullaganj Division have been selected as L2 landscapes:-

Raisen Division:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A4n	1843.581	266.292	601.925	2711.798	662.425	3374.223
2.	5D4A5b	0	283.938	109.94	393.878	3282.201	3676.079
3.	5D4A5c	933.614	663.506	517.328	2114.448	3972.943	6087.391
4.	5D4A5d	2727.855	951.023	545.714	4224.592	115.264	4339.856
5.	5D4A5f	1301.557	436.488	168.06	1906.105	5279.886	7185.991
6.	5D4A5g	2710.064	24.511	879.939	3614.514	3884.633	7499.147
7.	5D4A5m	1886.962	437.857	215.586	2540.405	1377.028	3917.433
8.	5D4A5n	1638.079	330.381	333.136	2301.596	2013.977	4315.573
9.	5D4A5t	5095.731	225.763	279.333	5600.827	1338.399	6939.226
10.	5D4A6d	16.199	0.02	19.267	35.486	3629.857	3665.343
Total		**18153.64**	**3619.779**	**3670.228**	**25443.65**	**25556.61**	**51000.26**

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

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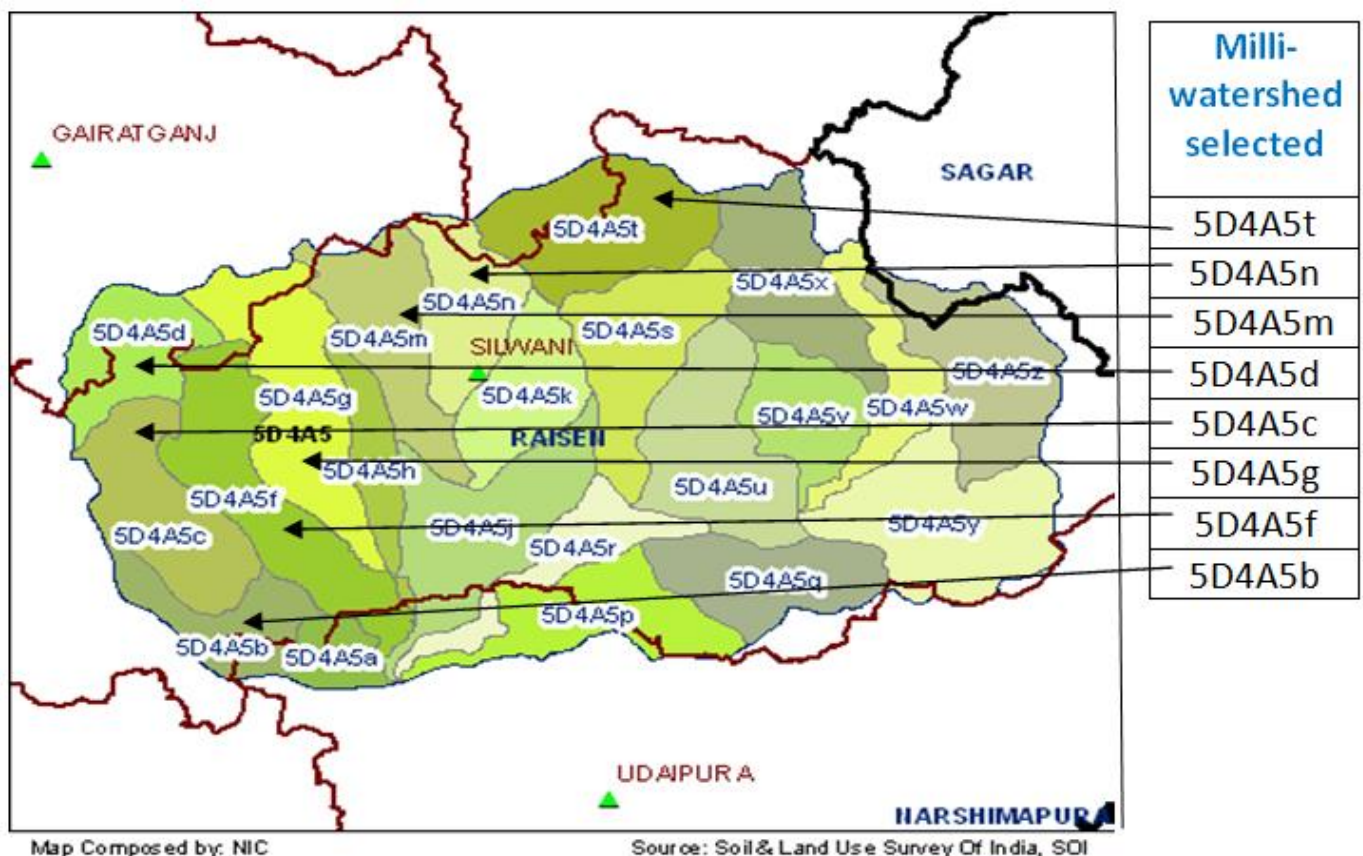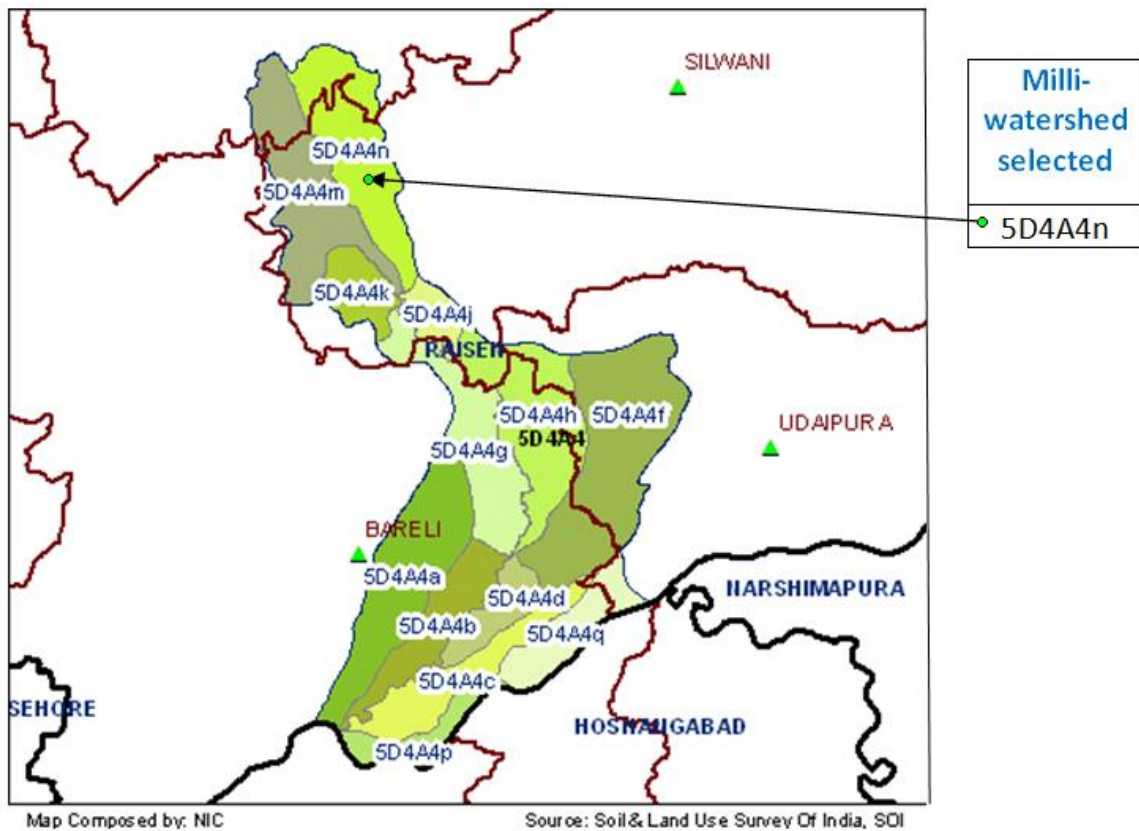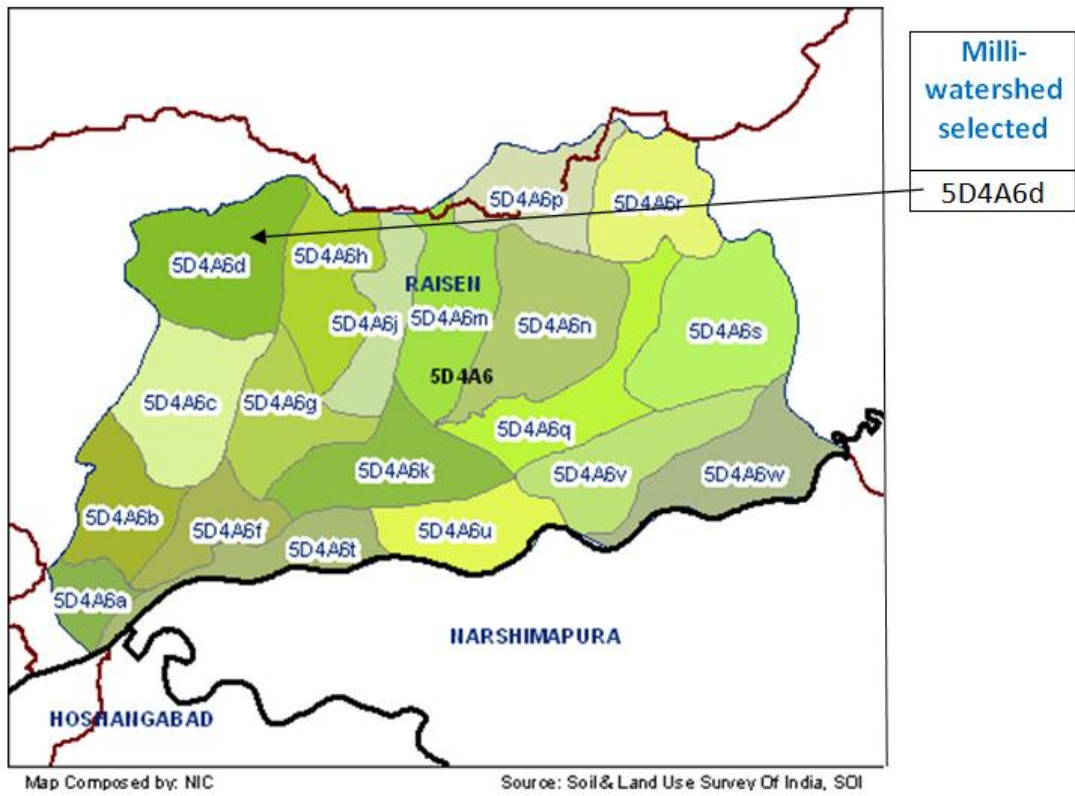
Obedullaganj Division:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A3f	3581.94	23.032	150.706	3755.678	90.037	3845.715
2.	5D4A3g	26.696	455.429	168.192	650.317	2913.342	3563.659
3.	5D4A3j	4052.921	797.437	295.875	5146.233	1266.331	6412.564
4.	5D4A3k	990.544	1067.189	571.916	2629.649	925.775	3555.424
5.	5D4A3m	581.994	983.457	136.182	1701.633	1469.604	3171.237
6.	5D4A3n	2393.465	1078.333	136.918	3608.716	1386.006	4994.722
7.	5D4A3p	1682.852	1482.203	914.573	4079.628	2210.305	6289.933
8.	5D4A3r	3299.877	1760.258	841.214	5901.349	1968.233	7869.582
9.	2C2H8a	1125.213	987.15	154.362	2266.725	2137.593	4404.318
10.	2C2H8v	657.4	1141.121	856.251	2654.772	4588.139	7242.911
Total		**18392.9**	**9775.609**	**4226.189**	**32394.7**	**18955.37**	**51350.07**

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI
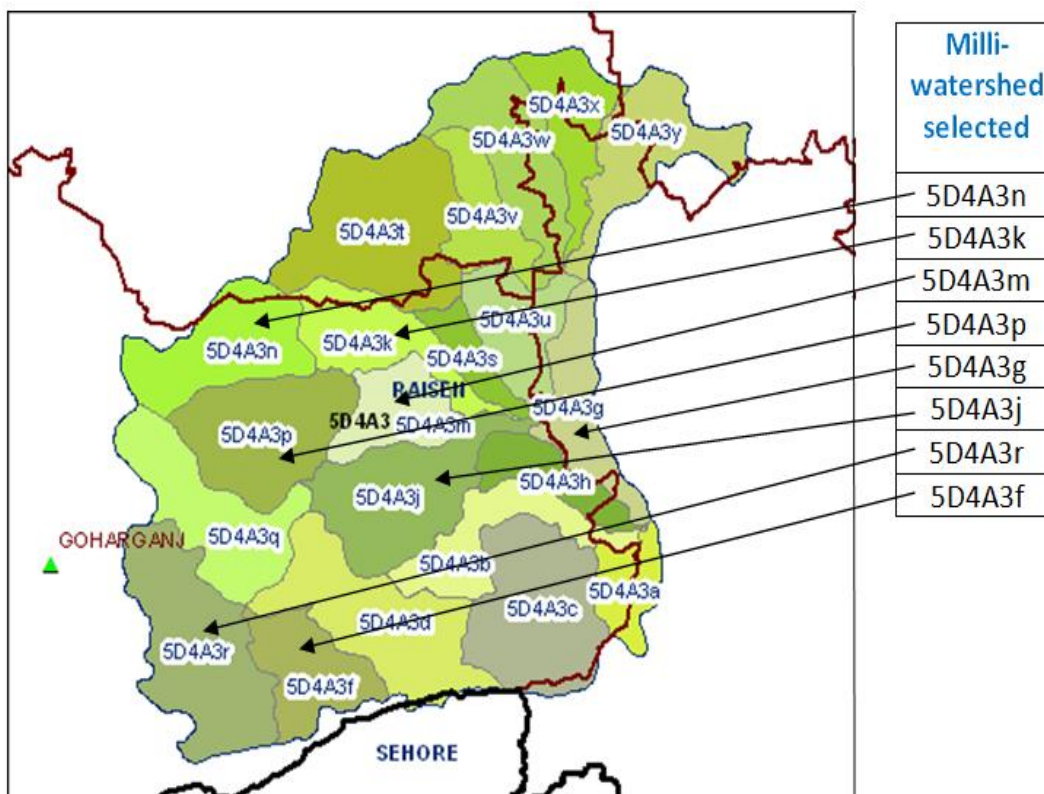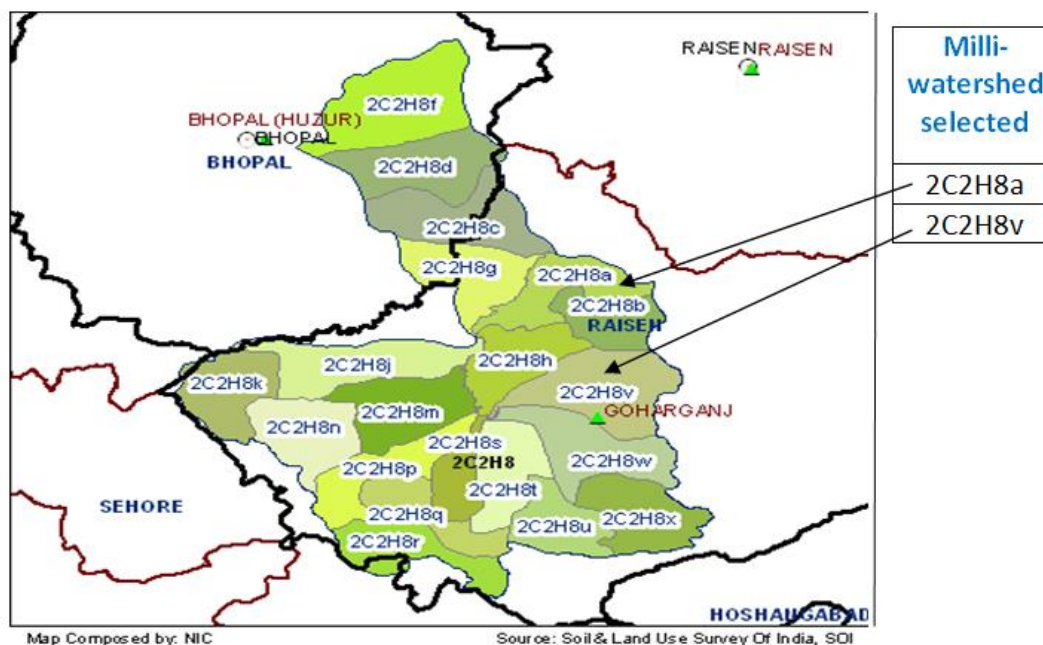
Thus the milliwatersheds selected as L2 landscapes in Raisen division have an area of 51000.26 ha. and landscapes of Obedullaganj division have an area of 51350.07 ha. The total area of the 20 landscapes selected in the district thus becomes 102350.33 ha. These 20 milli-watersheds are the operational units for implementation of GIM. All the 20 milliwatersheds possess forest as well as non forest area. These 20 milliwatersheds have 124 microwatersheds out of which 99 microwatersheds have forest as well as non forest area whereas remaining 15 microwatersheds are completely in forest area whereas 10 microwatersheds are completely in non forest area .The forest area in the milli –watersheds is largely dense forest which needs measures to supplement natural regeneration.

5.7.7 L3 landscapes selected in Raisen District :-

The 20 milli-watershed selected as L2 landscapes have further been divided into total 124 micro-watersheds which are the working units of the GIM. All the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

Raisen Division

5.7.7.1 Milli-watershed no. 5D4A4n :-

The micro-watersheds selected in this milli-watershed are as follows:-

| No. | Micro-watershed No. | Forest Area | | | | Non Forest Area | Total Area (ha.) |
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A4n1	0	0	8.795	8.795	368.549	377.344
2.	5D4A4n2	407.668	125.944	12.564	546.176	86.767	632.943
3.	5D4A4n3	141.958	0	0	141.958	0	141.958
4.	5D4A4n4	160.492	4.278	0	164.77	0	164.77
5.	5D4A4n5	405.182	7.347	251.078	663.607	0	663.607
6.	5D4A4n6	343.602	48.444	50.31	442.356	0	442.356
7.	5D4A4n7	384.679	80.279	279.178	744.136	207.109	951.245
	Total	**1843.581**	**266.292**	**601.925**	**2711.798**	**662.425**	**3374.223**

5.7.7.2 Milli-watershed no. 5D4A5b:-

The micro-watersheds selected in this milli-watershed are as follows:-

| No. | Micro-watershed No. | Forest Area | | | | Non Forest Area | Total Area (ha.) |
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A5b1	0	6.384	4.538	10.922	1181.291	1192.213
2.	5D4A5b2	0	0	0.676	0.676	799.47	800.146
3.	5D4A5b3	0	66.59	16.958	83.548	479.557	563.105
4.	5D4A5b4	0	86.239	28.779	115.018	241.356	356.374
5.	5D4A5b5	0	124.725	58.989	183.714	580.527	764.241
	Total	**0**	**283.938**	**109.94**	**393.878**	**3282.201**	**3676.079**

5.7.7.3 Milli-watershed no. 5D4A5c:-

The micro-watersheds selected in this milli-watershed are as follows:-

| No. | Micro-watershed No. | Forest Area | | | | Non Forest Area | Total Area (ha.) |
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A5c1	0	243.803	52.887	296.69	978.467	1275.157
2.	5D4A5c2	0	0	0		661.987	661.987
3.	5D4A5c3	38.253	72.058	12.161	122.472	677.739	800.211
4.	5D4A5c4	530.493	121.89	9.712	662.095	236.723	898.818
5.	5D4A5c5	0	0	0		758.151	758.151
6.	5D4A5c6	1.203	41.574	0.399	43.176	585.06	628.236
7.	5D4A5c7	219.39	115.194	216.526	551.11	48.576	599.686
8.	5D4A5c8	144.275	68.987	225.643	438.905	26.24	465.145
	Total	**933.614**	**663.506**	**517.328**	**2114.448**	**3972.943**	**6087.391**

5.7.7.4 Milli-watershed no 5D4A5d:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A5d1	499.367	124.233	96.821	720.421	0	720.421
2.	5D4A5d2	306.789	332.193	59.112	698.094	0	698.094
3.	5D4A5d3	700.047	3.772	94.544	798.363	20.571	818.934
4.	5D4A5d4	650.212	203.149	115.825	969.186	0	969.186
5.	5D4A5d5	571.44	287.676	179.412	1038.528	94.693	1133.221
	Total	**2727.855**	**951.023**	**545.714**	**4224.592**	**115.264**	**4339.856**

5.7.7.5 Milli-watershed no. 5D4A5f:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A5f1	0	31.91	1.208	33.118	521.463	554.581
2.	5D4A5f2	2.846	376.736	71.283	450.865	570.909	1021.774
3.	5D4A5f3	0	0	0	0	1150.196	1150.196
4.	5D4A5f4	0	0	0	0	1002.959	1002.959
5.	5D4A5f5	85.712	26.568	40.852	153.132	1046.855	1199.987
6.	5D4A5f6	251.102	0	0	251.102	448.465	699.567
7.	5D4A5f8	589.352	1.274	27.811	618.437	192.771	811.208
8.	5D4A5f9	372.545	0	26.906	399.451	346.268	745.719
	Total	**1301.557**	**436.488**	**168.06**	**1906.105**	**5279.886**	**7185.991**

5.7.7.6 Milli-watershed no. 5D4A5g:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A5g1	0	0	0	0	608.633	608.633
2.	5D4A5g2	0	0	68.608	68.608	1124.212	1192.82
3.	5D4A5g3	0	0	180.156	180.156	1158.545	1338.701
4.	5D4A5g4	0	0	0	0	447.587	447.587
5.	5D4A5g5	233.051	0	288.072	521.123	347.733	868.856
6.	5D4A5g6	480.744	0	21.94	502.684	135.661	638.345
7.	5D4A5g7	704.25	0	107.87	812.12	2.59	814.71
8.	5D4A5g8	745.861	24.511	132.689	903.061	52.952	956.013
9.	5D4A5g9	546.158	0	80.604	626.762	6.72	633.482
	Total	**2710.064**	**24.511**	**879.939**	**3614.514**	**3884.633**	**7499.147**

5.7.7.7 Milli-watershed no 5D4A5m:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A5m2	169.826	140.961	62.032	372.819	338.198	711.017
2.	5D4A5m3	496.758	82.823	0	579.581	33.883	613.464
3.	5D4A5m4	440.882	66.44	0	507.322	184.275	691.597
4.	5D4A5m5	0.488	52.786	35.231	88.505	664.62	753.125
5.	5D4A5m6	92.762	158.708	10.441	261.911	57.312	319.223
6.	5D4A5m7	372.541	77.1	0	449.641	336.932	786.573
7.	5D4A5m8	483.531	0	169.914	653.445	100.006	753.451
	Total	**1886.962**	**437.857**	**215.586**	**2540.405**	**1377.028**	**3917.433**

5.7.7.8 Milli-watershed no. 5D4A5n:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A5n1	0	0	0	0	463.684	463.684
2.	5D4A5n2	343.301	46.449	64.612	454.362	797.827	1252.189
3.	5D4A5n3	448.001	37.615	49.139	534.755	309.886	844.641
4.	5D4A5n4	543.977	41.317	114.056	699.35	40.246	739.596
5.	5D4A5n5	302.8	205	105.329	613.129	402.334	1015.463
	Total	**1638.079**	**330.381**	**333.136**	**2301.596**	**2013.977**	**4315.573**

5.7.7.9 Milli-watershed no. 5D4A5t:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A5t1	591.814	14.641	75.473	681.928	252.964	934.892
2.	5D4A5t2	415.931	71.636	44.207	531.774	260.309	792.083
3.	5D4A5t3	642.141	0	49.386	691.527	333.528	1025.055
4.	5D4A5t4	576.335	0	3.124	579.459	114.947	694.406
5.	5D4A5t5	1111.971	70.993	81.244	1264.208	229.583	1493.791
6.	5D4A5t6	663.328	23.77	3.547	690.645	0	690.645
7.	5D4A5t7	552.579	23.77	14.867	591.216	0	591.216
8.	5D4A5t8	541.632	20.953	7.485	570.07	147.068	717.138
	Total	**5095.731**	**225.763**	**279.333**	**5600.827**	**1338.399**	**6939.226**

5.7.7.10 Milli-watershed no. 5D4A6d:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A6d1	0	0	0	0	720.634	720.634
2.	5D4A6d2	0	0	0	0	773.983	773.983
3.	5D4A6d3	0	0	0	0	860.053	860.053
4.	5D4A6d4	0	0	0	0	617.207	617.207
5.	5D4A6d5	16.199	0.02	19.267	35.486	657.98	693.466
	Total	**16.199**	**0.02**	**19.267**	**35.486**	**3629.857**	**3665.343**

Obedullaganj Division:

5.7.7.11 Milli-watershed no 5D4A3f:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A3f1	563.287	12.192	50.688	626.167	51.718	677.885
2.	5D4A3f2	731.571	3.289	13.208	748.068	10.181	758.249
3.	5D4A3f3	665.503	3.289	20.4	689.192	28.138	717.33
4.	5D4A3f4	904.708	0	58.118	962.826	0	962.826
5.	5D4A3f5	716.871	4.262	8.292	729.425	0	729.425
	Total	**3581.94**	**23.032**	**150.706**	**3755.678**	**90.037**	**3845.715**

5.7.7.12 Milli-watershed no. 5D4A3g:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A3g1	0	0	0	0	554.798	554.798
2.	5D4A3g2	0	15.428	1.77	17.198	668.033	685.231
3.	5D4A3g3	0	349.268	95.137	444.405	970.757	1415.162
4.	5D4A3g4	26.696	90.733	71.285	188.714	719.754	908.468
	Total	**26.696**	**455.429**	**168.192**	**650.317**	**2913.342**	**3563.659**

5.7.7.13 Milli-watershed no. 5D4A3j:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A3j1	378.036	80.563	7.917	466.516	578.294	1044.81
2.	5D4A3j2	167.706	0	35.018	202.724	267.766	470.49
3.	5D4A3j3	1046.49	8.729	26.573	1081.792	184.623	1266.415
4.	5D4A3j4	433.487	354.444	174.995	962.926	135.162	1098.088
5.	5D4A3j5	981.882	51.208	48.627	1081.717	100.486	1182.203
6.	5D4A3j6	1045.32	302.493	2.745	1350.558	0	1350.558
	Total	**4052.921**	**797.437**	**295.875**	**5146.233**	**1266.331**	**6412.564**

5.7.7.14 Milli-watershed no. 5D4A3k:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A3k1	0	0	95.289	95.289	286.974	382.263
2.	5D4A3k2	0	121.245	0	121.245	347.594	468.839
3.	5D4A3k3	8.298	277.31	23.98	309.588	51.142	360.73
4.	5D4A3k4	132.776	140.546	223.83	497.152	108.422	605.574
5.	5D4A3k5	145.946	253.715	143.324	542.985	118.902	661.887
6.	5D4A3k6	237.912	185.399	40.619	463.93	0	463.93
7.	5D4A3k7	465.612	88.974	44.874	599.46	12.741	612.201
	Total	**990.544**	**1067.189**	**571.916**	**2629.649**	**925.775**	**3555.424**

5.7.7.15 Milli-watershed no. 5D4A3m:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A3m1	197.212	58.766	16.303	272.281	595.771	868.052
2.	5D4A3m2	223.713	494.227	34.748	752.688	665.893	1418.581
3.	5D4A3m3	161.069	430.464	85.131	676.664	207.94	884.604
	Total	**581.994**	**983.457**	**136.182**	**1701.633**	**1469.604**	**3171.237**

5.7.7.16 Milli-watershed no. 5D4A3n:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A3n1	382.638	256.323	4.774	643.735	355.769	999.504
2.	5D4A3n2	385.17	185.797	49.731	620.70	0	620.706
3.	5D4A3n3	295.741	86.679	0	382.42	358.114	740.534
4.	5D4A3n4	509.826	227.492	0	737.318	213.384	950.702
5.	5D4A3n5	443.267	269.711	61.137	774.115	197.218	971.333
6.	5D4A3n6	346.988	52.331	21.276	420.595	291.348	711.943
	Total	2393.465	1078.333	136.918	3608.716	1386.006	4994.722

5.7.7.17 Milli-watershed no 5D4A3p:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A3p1	3.426	262.016	224.302	489.744	458.849	948.593
2.	5D4A3p2	289.133	222.244	37.289	548.666	350.888	899.554
3.	5D4A3p3	387.149	267.197	151.006	805.352	126.217	931.569
4.	5D4A3p4	405.823	186.342	27.307	619.472	4.854	624.326
5.	5D4A3p5	369.129	233.072	29.338	631.539	775.261	1406.8
6.	5D4A3p6	228.192	311.332	445.331	984.855	494.236	1479.091
	Total	1682.852	1482.203	914.573	4079.628	2210.305	6289.933

5.7.7.18 Milli-watershed no. 5D4A3r:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A3r1	168.824	75.465	246.299	490.588	264.728	755.316
2.	5D4A3r2	465.021	240.914	82.251	788.186	291.186	1079.372
3.	5D4A3r3	599.327	61.076	334.191	994.594	147.552	1142.146
4.	5D4A3r4	253.862	99.598	21.879	375.339	447.516	822.855
5.	5D4A3r5	409.636	246.88	91.344	747.86	399.023	1146.883
6.	5D4A3r6	259.705	7.174	41.359	308.238	414.015	722.253
7.	5D4A3r7	676.728	109.816	0	786.544	4.213	790.757
8.	5D4A3r8	466.774	919.335	23.891	1410	0	1410
	Total	3299.877	1760.258	841.214	5901.349	1968.233	7869.582

5.7.7.19 Milli-watershed no. 2C2H8a:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C2H8a1	209.39	219.389	47.268	476.047	513.867	989.914
2.	2C2H8a2	678.784	88.401	4.386	771.571	431.889	1203.46
3.	2C2H8a3	23.94	72.956	3.888	100.784	523.658	624.442
4.	2C2H8a4	63.333	254.488	0	317.821	375.918	693.739
5.	2C2H8a5	149.766	351.916	98.82	600.502	292.261	892.763
Total		**1125.213**	**987.15**	**154.362**	**2266.725**	**2137.593**	**4404.318**

5.7.7.20 Milli-watershed no. 2C2H8v:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C2H8v1	0	0	0	0	1040.336	1040.336
2.	2C2H8v2	0.023	205.882	166.658	372.563	1020.845	1393.408
3.	2C2H8v3	0	252.721	197.686	450.407	424.945	875.352
4.	2C2H8v4	8.308	105.931	134.801	249.04	730.364	979.404
5.	2C2H8v5	29.082	368.319	23.508	420.909	606.469	1027.378
6.	2C2H8v6	437.941	82.666	173.313	693.92	4.375	698.295
7.	2C2H8v7	182.046	125.602	160.285	467.933	760.805	1228.738
Total		**657.4**	**1141.121**	**856.251**	**2654.772**	**4588.139**	**7242.911**

5.7.8 Reason for selection of L2 landscapes:-

- The area is ecologically important area and falls in the catchment area of perennial rivers Narmada, Betwa, Kaliyasot, and Palakmati.

- The livelihood opportunities are less. The level of dependence on forest is high.

- Income from Agriculture is meager. A large portion of the population in the landscape lives below poverty line.

- This landscape is biodiversity rich area .

- The area serves as buffer zone for the wild animals of Ratapani and Singhori sanctuaries .

- The forest is facing threat from the factors of degradation like fire, illicit felling, encroachment, illicit mining etc.

5.7.9 Possible solutions to enhance forest cover,improve ecosystem services and address the drivers of degradations:-

- Effective management to combat biotic pressure:-It will be achieved through efficient fire management, regularizing the grazing, control on illicit felling, enhancing fodder, fuel wood, bamboo, small and NTFP production through plantation of selective species.

- Enhancement of forest cover in forest and non forest area - It will be achieved through plantation in forest and non forest area.

- Soil and water conservation - It will be achieved through watershed treatment methodology i.e. the treatment from ridge to valley of the watershed.

- Reduction in the degree of dependence on forest- It will be achieved through promotion of alternate energy resources such as biogas, solar devices, LPG and fuel efficient devices .

- Promotion of Livelihood opportunities -Various livelihood activities such as Dairy Farming, NTFP based livelihoods, Kiranastore, sewing machine, Poultry farming, Dona pattal manufacturing and Fisheries will be taken up in the project villages along with skill development.

5.7.10 Proposed interventions:-

- Capacity building of JFMC members by organizing JFMC level workshop and training programs.

- Capacity building of forest personnel by organizing division level and range level workshops.

- Developing the spearhead teams in the JFMC areas to spread the concept of participatory management of community resources.

- Protection and maintenance activities to conserve the existing natural resources.

5.7.11 Cross cutting interventions proposed:-

- Improving fuel-wood efficiency and promoting alternative energy sources.
- Creating awareness about the non destructive harvesting of NTFP.

5.7.12 Livelihood improvement activities proposed:-

Skill Development trainings, Dairy farming, NTFP Collection and value addition to promote livelihoods activities.

5.7.13 Area proposed to be treated under different sub missions in Raisen District:-

Raisen Division:-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	5410	5255	5100	0	0	15765
2.	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	691	663	659	0	0	2013
3.	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	32	30	28	0	0	90
4.	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	15	15	15	0	0	45
5.	Submission 2 (f) Restoration of abandoned mining area	25	20	15	0	0	60
6.	Submission 3(a) Plantation in urban and peri urban areas	8	7	5	0	0	20
7.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	1209	1175	1171	0	0	3555
8.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	235	220	205	0	0	660
Total		**7625**	**7385**	**7198**	**0**	**0**	**22208**

Obedullaganj Division

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	6800	6700	5385	0	0	18885
2.	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	1800	1610	1525	0	0	4935
3.	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	895	790	760	0	0	2445
4.	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	475	422	408	0	0	1305
5.	Submission 1 (c) Restoration of grasslands	91	85	79	0	0	255
6.	Submission 3(a) Plantation in urban and peri urban areas	4	3	3	0	0	10
7.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	1335	1225	1130	0	0	3690
8.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	320	295	285	0	0	900
	Total	**11720**	**11130**	**9575**	**0**	**0**	**32425**

Thus in Raisen division 22208 ha. and in Obedullaganj division 32425 ha. area is proposed to be treated under the project .Most of the area being proposed for treatment belongs to Submission 1 (a) Moderately dense forest cover, but showing degradation.

5.7.14 Budget for Raisen district:-

Submission wise budget summary for Raisen district is given below-

Raisen Division

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	1455.65	42.339	524.30	2022.29
2017-18	2942.31	31.977	1041.00	4015.29
2018-19	3622.36	23.265	1275.97	4921.59
2019-20	2467.30	16.269	869.25	3352.82
2020-21	1216.55	10.791	429.57	1656.92
Total	**11704.18**	**124.64**	**4140.09**	**15968.91**

Obedullaganj Division

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	2471.94	115.17	905.49	3492.60
2017-18	4928.78	93.489	1757.79	6780.06
2018-19	5781.79	73.92	2049.50	7905.21
2019-20	3876.84	55.77	1376.41	5309.02
2020-21	1941.95	39.765	693.60	2675.31
Total	**19001.29**	**378.11**	**6782.79**	**26162.19**

A total of Rs. 421.30 cr. is proposed for implementation of the project in Raisen district.

Details of budget for Raisen Division is given in given Annexure viii and for Obaidullaganj Division in Annexure ix.

5.8 Landscape Plan Sehore District

District Sehore stands in the foot hills of Vindhyachal range in the middle of Malwa region. The district lies between $22^0 31'$ to $22^0 40'$ North latitude and $76^0 22'$ to $78^0 8'$ East longitude.
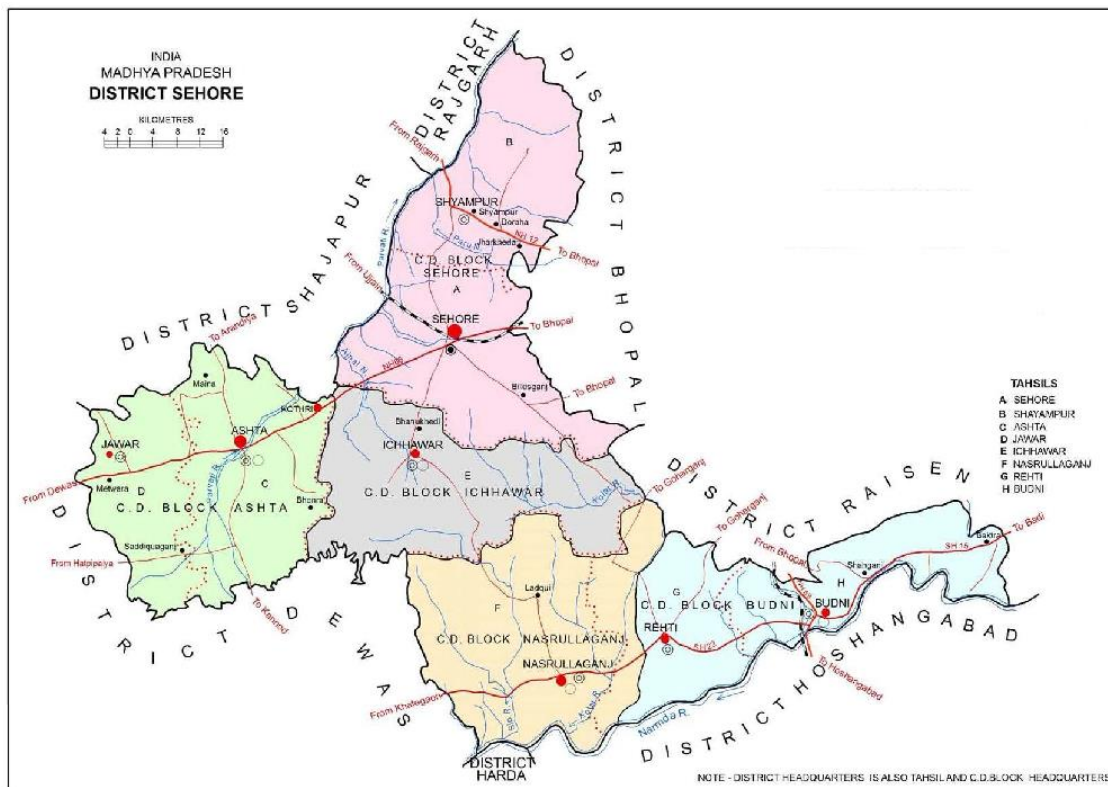
The large extent of the district is part of Malwa plateau. The district mainly constitutes of following three geographical formations:-

1.	Malwa plateau	58%
2.	Vindhyachal Mountain rage	22%
3.	Narmada valley	20%

The altitude varies from 282 meter to 666 meter above mean sea level. The eastern part of the district is covered with sandstone and shales where as the western part is covered with sandstone and basalt. Most of the soil on malwa plateau is black soil. Alluvial soil is present in the area lying near Narmada river. The average annual precipitation in the district is 1100 mm. and average annual temperature varies from a minimum of 19.02^0 c to maximum of 31.94^0c. Major rivers of the district are Narmada and Parvati. The main tributaries of Narmada passing through the district are Kaken, Seep, Kolar, Amber, Bhagner and Dhaboi. Parvati river has its origin in Sehore district itself which originates from Govindpur village and has Ajnal, Papnas, Sewan etc. as its main tributaries.

There is only one territorial forest division in the district namely Sehore forest division, which has been selected for GIM.

5.8.1 Forest:-

The forests of Sehore district are Tropical Dry Deciduous forest. Teak is a major species of the forest and a large area belongs to teak forest. Rest of the forests are mixed forest where other main species are Dhawda, Saja, Lendia, Tendu,Gurjan, Achar, Aonla, Tinsa etc. Sehore district is bestowed with good forest area and 49% of which is dense forest area where density of the forest goes up to 0.8.

The area wise distribution of the forest is as follows:-

Reserve forest	Protected forest	Total
1128.48 (Sq. Km.)	401.23 (Sq. Km.)	1529.71 (Sq. Km.)

Bamboo in the forest of Sehore is found in a very degraded stage.

5.8.2 Wildlife:-

With the abundance of forest area in the district Sehore was once known for its wildlife. But due to increasing biotic pressure the wildlife in the forest of district is not in a prominent position. But even then their presence is there and recently even tiger has been reported very frequently in the district in the area adjoining to Bhopal. The other species found in the forest of the district are Leopard, Chousingha, Chinkara, Neelgai, Black buck.

5.8.3 Dependence on forest:-

There are 1031 villages in the district out of which 470 villages lie in a periphery of 5 km. from forest area. Large number of population is dependent on forest for their livelihood. According to working plan estimation the annual requirement of the district is as follows:-

	Item	Annual requirement
1.	Timber	6313 cmt.
2.	Poles	4562 cmt.
3.	Fuel wood	26440 cmt.
4.	Bamboo	447305 No.

For most of the requirement villagers are dependent on forest but there is a great gap between demand and supply. Apart from this there are 506870 cattles in the district which corresponds to 619870 cattle units. The grazing carrying capacity of Sehore forest is only 193095 cattle units. It is evident from above figures that the grazing pressure is too much on the forest because more than 50% cattle depend on forest for fodder.

Besides, villagers depend on forest for MFP collection and lac cultivation also. The Dohar and Basod community of the district prepare articles from sirali / harsingar (Nictanthus arbortritris) found in the forest.

5.8.4 Joint forest management:-

There are 470 villages lying within 5 km periphery of forest land. In these villages 233 JFMCs have been constituted. They are 144 forest protection committee and 89 village forest committees and an area of about 1527 sq. km. has been assigned to these committees. Apart from actively cooperating in forest protection these committees are also participating in forest development activities.

5.8.5 Demography:-

As per2011 the census data of the district are as follows:-

Total area of the district		6578 Sq Km
Literacy rate		70.1 %
No. of villages		1031
No. of households		255430
Population	Rural	1062870
	Urban	248462
	Total	1311332
Population	Male	683743
	Female	627589
	Total	1311332
Scheduled caste population		271282
Scheduled tribe population		145512

Schedule Caste form 20.69% and Schedule Tribe form 11.10% of the total population of the district. Large number of worker population, about 39%, work as agricultural laborer.

5.8.6 L-2 Landscapes selected in Sehore District:-

Following 5 milli watersheds of Sehore division have been selected as L2 landscapes:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A1b	1187.833	1443.478	98.18503	2729.496	1676.75	4406.246
2.	5D2D8a	2641.345	845.1525	187.1616	3673.659	1928.767	5602.426
3.	5D2D8c	1757.581	1337.763	204.6178	3299.95	4308.482	7608.444
4.	5D2D8f	543.1131	1467.895	92.68467	2103.693	1819.229	3922.922
5.	5D2D8g	947.8074	2046.092	323.0285	3316.93	2367.854	5684.782
Total		**7077.68**	**7140.381**	**905.6776**	**15123.73**	**12101.08**	**27224.82**

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI
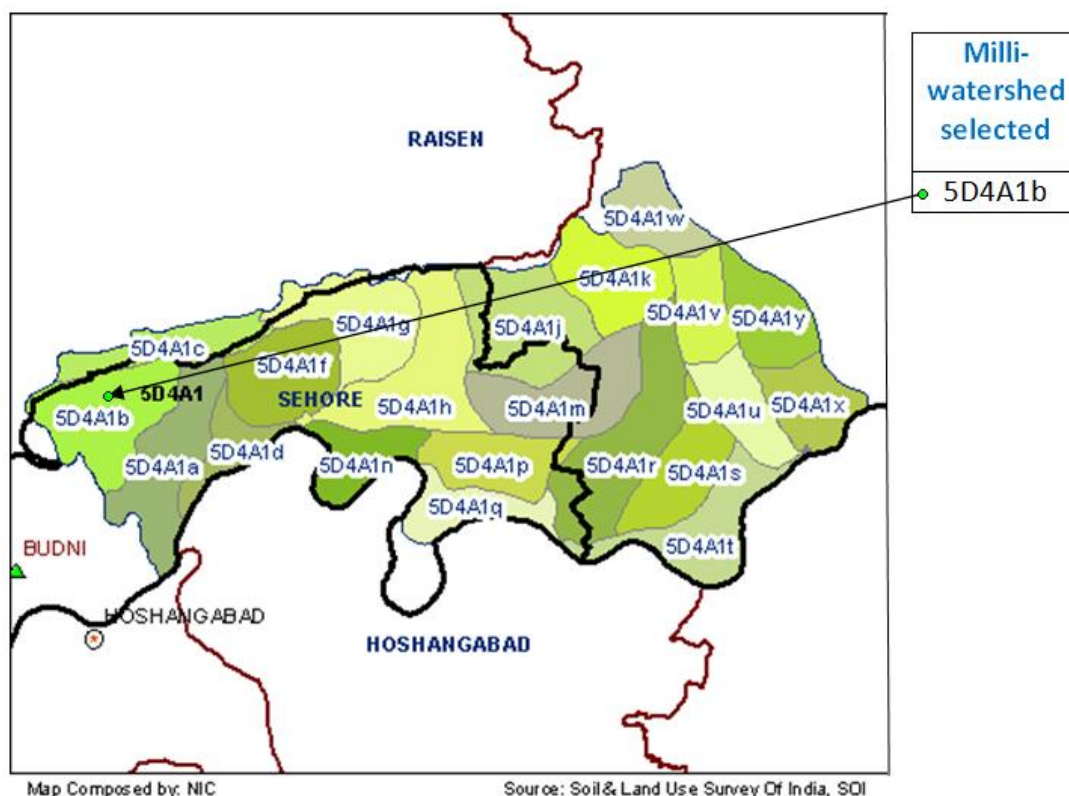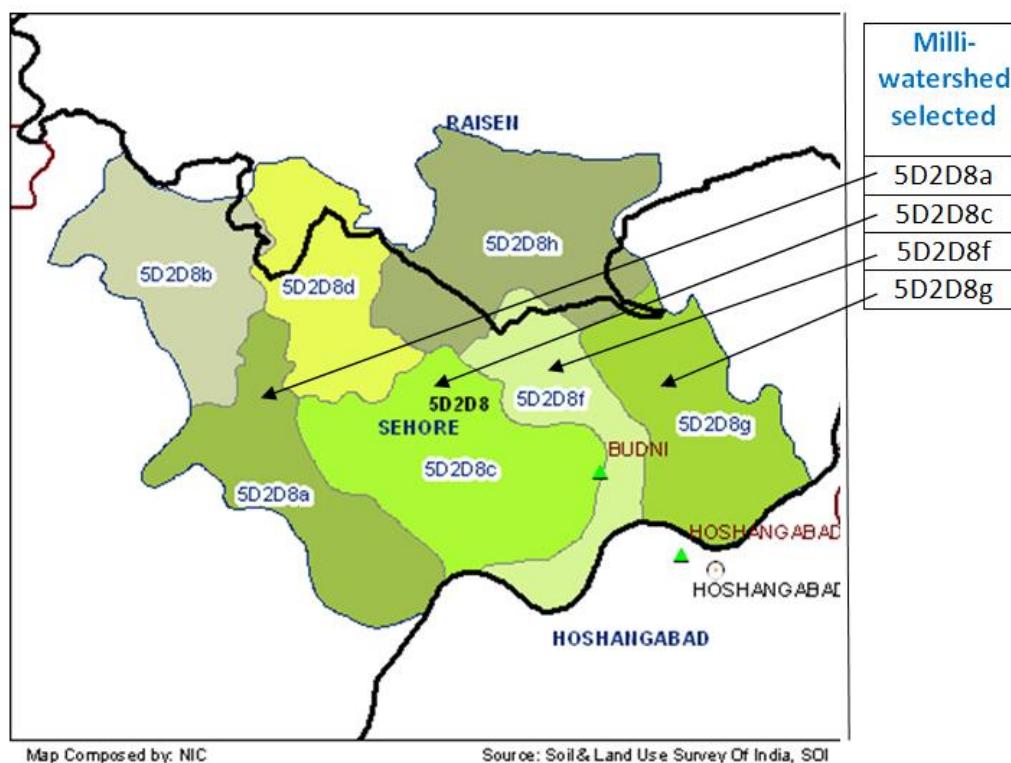
Thus the milliwatersheds selected as L2 landscapes for Sehore division have an area of 27224.82 ha. These 5 milli-watersheds are the operational units for implementation of GIM. All the 5 milliwatersheds possess forest as well as non forest area. These 5 milli-watersheds have 28 microwatersheds out of which 22 microwatersheds have forest as well as non forest area whereas remaining 03 microwatersheds are purely in non forest area and 03 microwatersheds are completely in forest area .The forest area in the milli –watersheds is largely dense as well as open forest area which needs measures to supplement natural regeneration by artificial means.

5.8.7 L3 landscapes selected in Sehore District:-

The 5 milli-watersheds selected as L2 landscapes have further been divided into total 28 micro-watersheds which are the working unit of the GIM. All the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

5.8.7.1 Milli-watershed no. 5D4A1b :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A1b1	103.27	518.99	6.08	628.3509	278.76	907.106
2.	5D4A1b2	672.92	377.00	16.30	1066.219	0.00	1066.216
3.	5D4A1b3	115.55	366.51	5.76	487.8231	498.44	986.263
4.	5D4A1b4	296.08	96.98	70.05	463.1124	104.37	567.48
5.	5D4A1b5	0	83.99	0	83.99059	795.19	879.181
Total		**1187.833**	**1443.478**	**98.18503**	**2729.496**	**1676.75**	**4406.246**

5.8.7.2 Milli-watershed no. 5D2D8a :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D2D8a1	150.20	0	107.82	258.01	1502.04	1760.057
2.	5D2D8a2	343.06	75.23	10.04	428.33	387.28	815.61
3.	5D2D8a3	318.31	444.34	29.82	792.48	0.00	792.481
4.	5D2D8a4	1050.58	278.18	39.48	1368.24	0.00	1368.237
5.	5D2D8a5	779.20	47.40	0	826.60	39.44	866.041
	Total	**2641.345**	**845.1525**	**187.1616**	**3673.659**	**1928.767**	**5602.426**

5.8.7.3 Milli-watershed no. 5D2D8c :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D2D8c1	285.93	47.65	40.17	373.75	555.99	929.746
2.	5D2D8c2	560.84	0	0	560.84	157.11	717.955
3.	5D2D8c3	284.61	459.28	17.15	761.04	119.49	880.53
4.	5D2D8c4	0	14.74	4.08	18.82	929.90	948.725
5.	5D2D8c5	0	39.71	120.92	160.63	836.38	997.014
6.	5D2D8c6	8.37	86.31	13.59	108.27	859.17	967.439
7.	5D2D8c7	0	0.58	0	0.58	850.44	851.022
8.	5D2D8c8	617.83	689.48	8.70	1316.01	0	1316.013
	Total	**1757.581**	**1337.763**	**204.6178**	**3299.95**	**4308.482**	**7608.444**

5.8.7.4 Milli-watershed no .5D2D8f:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D2D8f1	0	0	0	0	1211.007	1211.007
2.	5D2D8f2	83.01	269.78	8.13	360.9226	249.84	610.758
3.	5D2D8f3	56.02	651.00	84.55	791.5704	358.39	1149.957
4.	5D2D8f4	404.09	547.11	0	951.2	0.00	951.2
	Total	**543.1131**	**1467.895**	**92.68467**	**2103.693**	**1819.229**	**3922.922**

5.8.7.5 Milli-watershed no. 5D2D8g:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D2D8g1	13.21	8.28	4.67	26.17	861.77	887.944
2.	5D2D8g2	225.71	305.43	111.61	642.7522	64.42	707.17
3.	5D2D8g3	184.93	670.71	120.92	976.56	0.00	976.554
4.	5D2D8g4	140.57	600.73	29.97	771.2638	0.00	771.263
5.	5D2D8g5	0	0.00	0	0	986.34	986.336
6.	5D2D8g6	383.39	460.94	55.86	900.1849	455.33	1355.515
Total		**947.8074**	**2046.092**	**323.0285**	**3316.93**	**2367.854**	**5684.782**

5.8.8 Reason for selection of L2 landscapes:-

- The area selected under L2 landscape falls in the catchment of Narmada river.

- The regeneration of the prominent species in the forest is very poor and requires special assistance.

- The area is adjoining to Ratapani wild life sanctuary and acts as the buffer to the protected area.

- The rehabilitation of proposed forest area will ensure conservation of soil and water, and help in conserving biodiversity which is essential in maintaining ecological balance of the area and also for dispersal of wild animals.

- The forest area is prone to illicit felling as it is Teak rich area.

5.8.9 Possible solutions to enhance forest cover, improve ecosystem services and address the drivers of degradations:-

- Effective management to combat biotic pressure - It will be achieved through efficient fire management, regularizing the grazing, control on illicit felling, enhancing fodder, fuel wood, bamboo, small and NTFP production through plantation of selective species.

- Enhancement of forest cover in forest and non forest area

 - It will be achieved through plantation in forest and non forest area.

- Soil and water conservation - It will be achieved through watershed treatment methodology i.e. the treatment from ridge to valley of the watershed.

- Reduction in the degree of dependence on forest- Reduction in the degree of dependence on forest will be achieved through promotion of alternate energy resources such as biogas, solar devices, LPG and fuel efficient stoves and introduction of various community livelihood

opportunities and plantation of the species which are suitable to increase the fuel, fodder, small timber and NTFP production.

5.8.10 Proposed interventions:-

- Strengthening of Forest department and JFMC
- Promoting Team of Community foresters at JFMC level
- Forest Protection and maintenance activities with the help of local communities.

5.8.11 Cross cutting interventions proposed:-

- Improving fuel-wood efficiency and promoting alternative energy sources

5.8.12 Livelihood improvement activities proposed:-

- Various livelihood activities such as Dairy Farming, NTFP based livelihoods, general store, sewing machine, Poultry farming, Dona pattal manufacturing and Fisheries will be taken in the villages.

5.8.13 Area proposed to be treated under different sub missions in Sehore District:-

Following area is proposed to be treated during the project period:-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	2415	2340	2325	0	0	7080
2.	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	355	350	330	0	0	1035
3.	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	95	88	87	0	0	270
4.	Submission 3(a) Plantation in urban and peri urban areas	8	7	5	0	0	20
5.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	692	683	680	0	0	2055
6.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	142	133	130	0	0	405
7.	Submission 5 Restoration of wetlands	50	40	25	0	0	115
	Total	3757	3641	3582	0	0	10980

Total 10980 ha. area is proposed to be treated. The maximum emphasis has been given to treat the moderately dense forest area .There are certain wet lands in the district which would be treated under the Submission 5 Restoration of wetlands.

5.8.14 <u>Budget for Sehore district:-</u>

Submission wise budget summary for Sehore district is given below-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	763.86	6.6	269.66	1040.12
2017-18	1541.48	5.148	541.32	2087.95
2018-19	1899.52	4.29	666.33	2570.15
2019-20	1294.85	3.564	454.45	1752.86
2020-21	638.13	2.607	224.26	864.99
Total	**6137.84**	**22.21**	**2156.02**	**8316.06**

A total budget of Rs 83.16 cr. has been estimated for the project.

Details of budget for Sehore Division is given in given Annexure x.

5.9 Landscape Plan Dhar District

Dhar district is located in the Malwa region of western Madhya Pradesh state in central India. The district is located between 22^0 47' to 23^0 08' north latitude and 74^0 28' to 75^0 42' east longitude. The Vindhyan range runs east and west through the district.
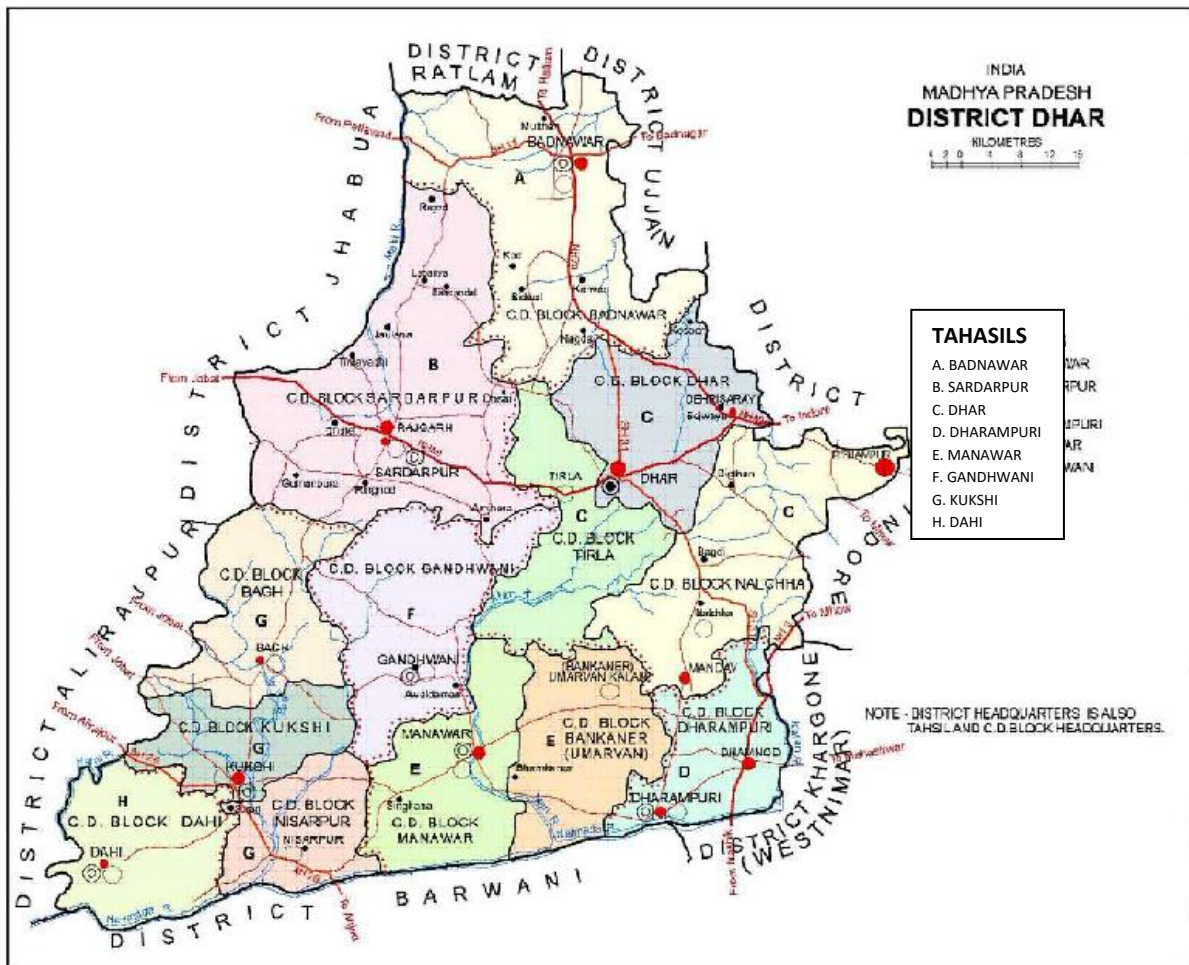
The northern part of the district lies on the Malwa plateau. The northwestern portion of the district lies in the watershed of the Mahi River and its tributaries, while the northeastern part of the district lies in the watershed of the Chambal River, which drains into the Ganges via the Yamuna River. The portion of the district south of the ridge of the Vindhya lies in the watershed of the Narmada River, which forms the southern boundary of the district. The district extends over three physiographic divisions. They are the Malwa Plateau, the Vindhyachal range and the Narmada valley.

Malwa Plateau

The northern half of the district lies on the Malwa plateau. It covers the northern parts of Dhar, Sardarpur and Badnawar tahsils. The average elevation of the plateau is 500 metres above mean sea level. The land is undulating with a few scattered flat topped hills roughly aligned between the valleys from south to north. The valleys are covered with black cotton soil of varying thickness, mostly adapted for cultivation. The mounds may bear gravels or the underlying sandstone rocks may have been exposed.

Vindhyachal Range

The great Vindhyachal range extends generally from west to east and scarps at most of its length towards the south. In Dhar also the south-ward scarps are well marked, the wall rising from 400 to 600 meters. However, in the western part their faces have been eroded back into long and deep

rugged valleys of the tributary hills of the Narmada. In fact the strong currents of the small streams on the steep southern side have cut back at their heads.

In the eastern and central parts of the Vindhyachal in Dhar the main hill range is continuous but in the west it is dissected by deep channels of the rivulets. The range slopes towards the north and gradually meets the Malwa plateau. Numerous spurs also extend over the Malwa plateau in the north. But in the western half in the district one may also find a series of denuded ridges alternating with the parallel stream-channels and running for some kilometers from local confusion, unless one tries to trace the line of the main peaks.

The highest peak of the district, Mograba (751.03 meters) lies in the central part. Nilkanth (702.26 meters) lies further east and the Shikarpura hill rises up to 698.91 meters. The famous historical fort of Mandugarh towers the flat-topped hill about 600 meters, from the mean sea level.

Narmada Valley

Below the Vindhyachal scarps lies the narrow valley of the Narmada. It occupies the southern part of the district in Manawar tahsil and the south-eastern part of Kukshi tahsil. The width of the valley is 15 to 30 kilometers. The elevation varies from 275 meters in the northern part of Manawar tahsil to 150 meters in the low plain of Nisarpur in the south-west. To the east between Khalghat and Bakaner the valley is undulation wider, more open and fertile with alluvial cover. Proceeding westward, the valley is studded with hills alternatively cut up by numerous streams which join the Narmada along the southern boundary of the district. The result is that there are few stretches and pockets of alluvium along the streams.

The average annual rainfall is 833.6 mm. The normal maximum temperature received during the month of May is 39.9^0 c and minimum during the month of January is 9.6^0 c. The main soil type developed in the area are black cotton soil , loamy soil and lateritic soils.

There is only one forest division in the district and it has been selected for the purpose of GIM.

5.9.1 Forest:-

Forests of Dhar are mainly Southern Tropical Dry Deciduous Mixes forest. The main species are Dhawda, Palash, Lendia, Salai, Moyan, Anjan. Most of the forests of Dhar district are degraded forest with vast stretches of denuded lands. The distribution of the forest area in the division is as follows:-

Reserve Forest	Protected Forest	Grass Bir	Sanctuary area	Total (ha.)
82802.14	45936.63	33.685	1295.02	130067.48

There are old grass birs and one bird sanctuary is also there in the district.

5.9.2 Wildlife:-

Before independence Dhar was ruled by earstwhile small state rulers and chieftans who used to maintain game areas for hunting purposes. But with depletion of forest most of the wild life has vanished and there is no significant wild life left in the district. Only hyena, jackal, hare etc. can be seen but news about presence of leopard and their sighting is quite frequent. The area is still home to endangered bird species namely Kharmore or Lesser florican .For the protection and conservation of this bird Sardarpur bird, sanctuary has been constituted in Dhar district.

5.9.3 Dependence on forest:-

There are 1477 villages in the district out of which 544 villages lie in a periphery of 5 km. from forest area. Substantial population is dependent on forest for their livelihood. According to working plan estimation the annual requirement of the district is as follows:-

Sr.No.	Item	Annual requirement
1.	Timber	5864.35 cmt.
2.	Fuel wood	640008 qt.
3.	Bamboo	118960 No.

For most of the requirement villagers are dependent on forest but there is a great gap between demand and supply. Apart from this there is huge grazing pressure also on forest.

5.9.4 Joint Forest Management:-

There are 544 villages lying within 5 km periphery of forest land. In these villages 241 JFMCs have been constituted. Out of these 240 are village forest committees .There is one eco development committee also which is in the area adjoining the Sardarpur wild life sanctuary. Since there is not much dense forest area in the division, no forest protection committee has been constituted in the division. A total 1185.760 Sq. Km. area has been assigned to these committees constituted in the division.

5.9.5 Demography:-

As per 2011 census data the population dynamics of the division is as follows:-

Total area of the district		8153 Sq Km
Literacy rate		59 %
No. of villages		1477
No. of households		423324
Population	Rural	1772572
	Urban	413221
	Total	2185793
Population	Male	1112725
	Female	1073068
	Total	2185793
Scheduled caste population		145436
Scheduled tribe population		1222814

Dhar is a tribal dominant area where 55.94% of the population is Scheduled tribe. Bagh, Dahi, Dhar, Dharampuri, Gandhwani, Kukshi, Nalchha, Nisarpur, Sardarpur, Tirla and Umarban are tribal blocks in the districts. Main tribe is Bheel which has Barela, Bhilala and Pateliya as sub tribe. The main economy of the district is agriculture and 42.55% of the worker population which is 437437 person work as agriculture labourers.

5.9.6 L-2 Landscapes selected in Dhar District:-

Following 3 milli watersheds of the division have been selected as L2 landscapes:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D2A7g	0	700.664	950.808	1651.472	1827.715	3479.187
2.	5D2A7j	0	1436.448	1528.626	2965.074	441.261	3406.335
3.	5D2A8t	0	713.917	2280.465	2994.382	915.041	3909.423
Total		**0**	**2851.029**	**4759.899**	**7610.928**	**3184.017**	**10794.95**

Thus total 10794.95 ha. area of these landscapes have been selected for treatment under GIM. These 3 milli-watersheds are the operational unit for implementation of GIM. There is no dense forest in the landscapes selected .Even the open forest area is also very little, most of the area is blank and non forest area. All the 3 milliwatersheds possess forest as well as non forest area. These 3 milli-watersheds have 18 microwatersheds and all the microwatersheds have forest as well as non forest area.

Map Composed by: NIC   Source: Soil& Land Use Survey Of India, SOI
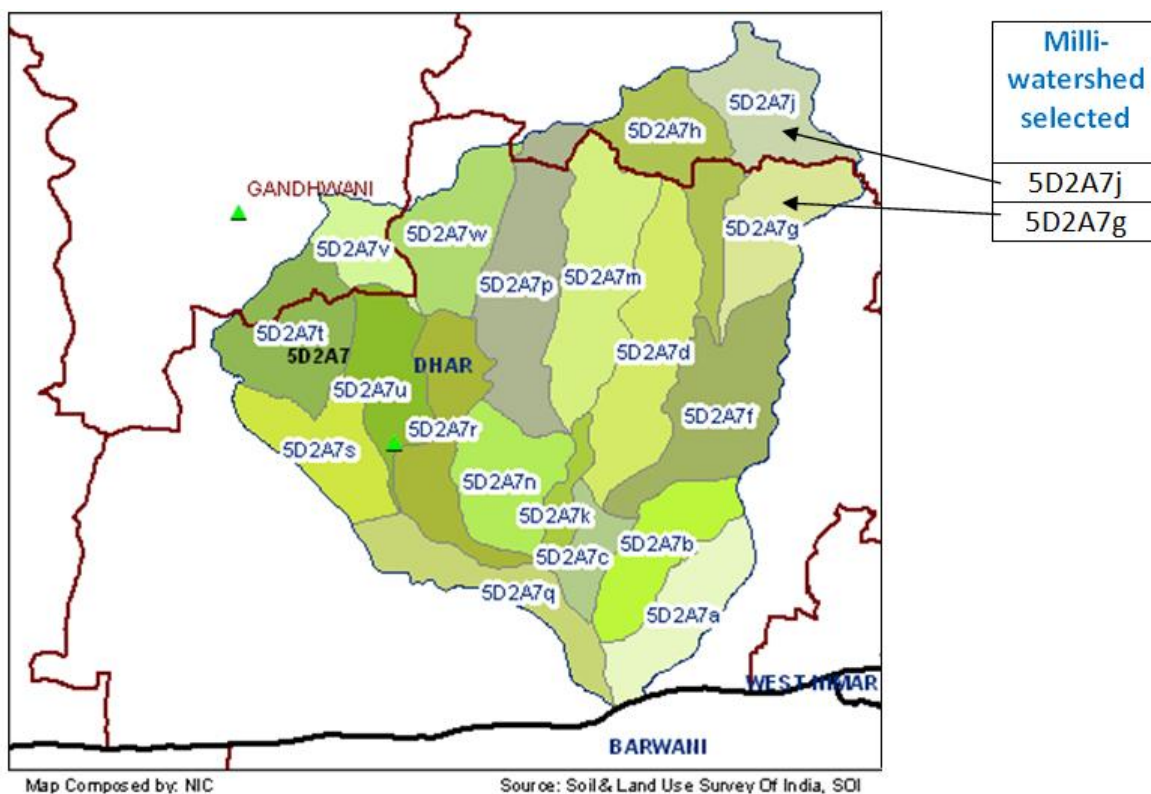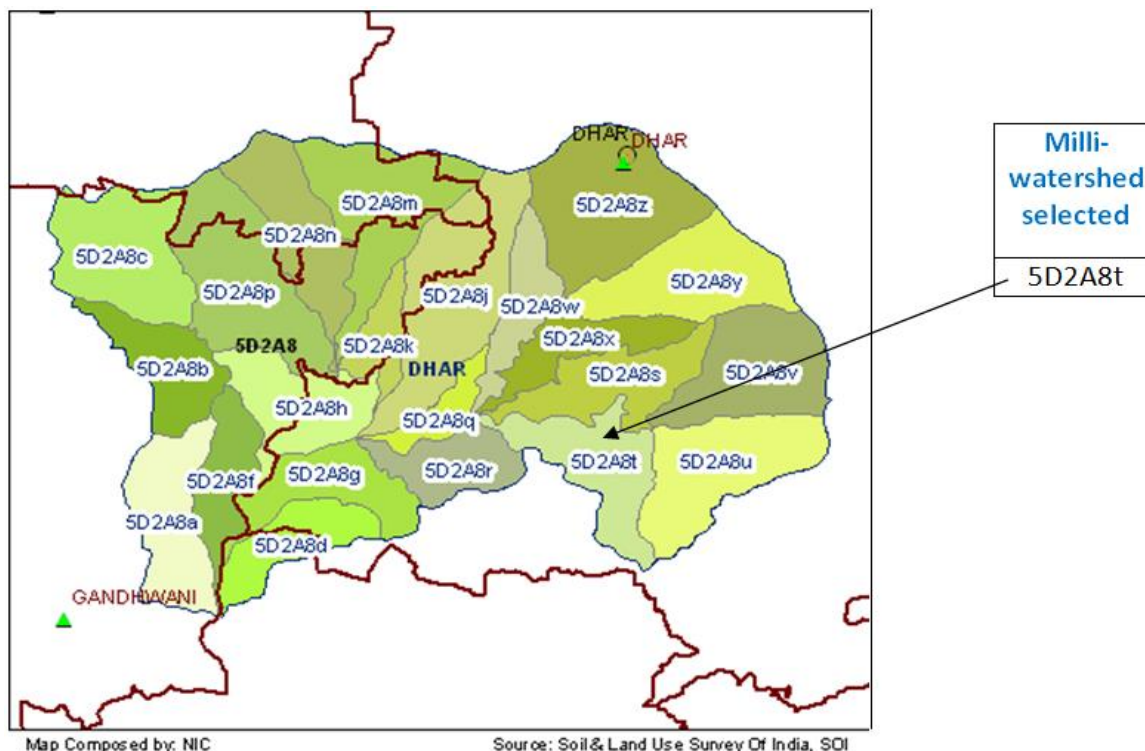
5.9.7 L3 landscapes selected in Dhar District.

The 3 milli-watersheds selected as L2 landscapes are constituted of total 18 micro-watersheds which are the working unit of the GIM. All the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

5.9.7.1 <u>Milli-watershed no. 5D2A7g:-</u>

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D2A7g1	0	0	7.898	7.898	379.964	387.862
2.	5D2A7g2	0	51.207	96.243	147.45	458.51	605.96
3.	5D2A7g3	0	220.383	181.314	401.697	94.864	496.561
4.	5D2A7g4	0	52.834	218.155	270.989	453.264	724.253
5.	5D2A7g5	0	234.681	17.059	251.74	212.094	463.834
6.	5D2A7g6	0	141.559	430.139	571.698	229.019	800.717
Total		**0**	**700.664**	**950.808**	**1651.472**	**1827.715**	**3479.187**

5.9.7.2 Milli-watershed no. 5D2A7j:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D2A7j1	0	223.029	119.174	342.203	98.347	440.55
2.	5D2A7j2	0	352.178	302.825	655.003	61.938	716.941
3.	5D2A7j3	0	372.624	523.53	896.154	76.507	972.661
4.	5D2A7j4	0	294.649	325.57	620.219	178.121	798.34
5.	5D2A7j5	0	193.968	257.527	451.495	26.348	477.843
Total		**0**	**1436.448**	**1528.626**	**2965.074**	**441.261**	**3406.335**

5.9.7.3 Milli-watershed no. 5D2A8t:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D2A8t1	0	178.709	323.748	502.457	123.812	626.269
2.	5D2A8t2	0	106.604	303.328	409.932	14.871	424.803
3.	5D2A8t3	0	135.955	345.73	481.685	103.567	585.252
4.	5D2A8t4	0	49.894	430.782	480.676	31.901	512.577
5.	5D2A8t5	0	82.914	284.552	367.466	137.619	505.085
6.	5D2A8t6	0	147.15	168.201	315.351	164.44	479.791
7.	5D2A8t7	0	12.691	424.124	436.815	338.831	775.646
Total		**0**	**713.917**	**2280.465**	**2994.382**	**915.041**	**3909.423**

5.9.8 Reason for selection of L2 landscapes:-

- Forests of selected area are degraded due to heavy biotic pressure. But this area is equally important for Biodiversity means.
- Area falls in the watershed of Mahi river.
- Scheduled area with dominant tribal population.
- This landscape is biodiversity rich area - The area contains endangered plant as well as animal species.
- Large percentage of the population in the landscape lives below poverty line.
- The livelihood opportunities are less. In the district there only one industrial area located at Pithampur but it is far from the selected area so the level of dependence on forest is high.
- Income from agriculture is meager.
- Forest land is in degraded condition.

5.9.9 Possible solutions to enhance forest cover, improve ecosystem services and address the drivers of degradations:-

- Effective management to combat biotic pressure – It will be achieved through efficient fire management, regularizing the grazing, control on illicit felling, enhancing fodder, fuel wood, bamboo, small and NTFP production through plantation of selective species.

- Enhancement of forest cover in forest and non forest area - It will be achieved through plantation in forest and non forest area.

- Enhancement of quality and productivity of the forest- It will be achieved through soil water conservation methods on the line of watershed treatment methodology and by providing assistance to natural regeneration.

- Reduction in the degree of dependence on forest- Reduction in the degree of dependence on forest will be achieved through promotion of alternate energy resources such as biogas, solar devices, LPG and fuel efficient stoves.

- Development of pasture land.

- Degraded and open forest area shall be treated.

- To check the wind velocity shelterbelt plantation will be taken up.

5.9.10 Proposed interventions:-

- Promotion and Strengthening of JFMCs by organizing JFMC level and Division level workshop and training program and awareness generation on GIM. Training will be provided to field staff and members on PRA micro-planning, watch and ward activities and on establishing convergence.

- Developing the Team of Community foresters at JFMC level - Young and educated youth will be selected from JFMCs as Community forester and they will be trained in account keeping and forest management aspects. These community foresters will assist the forest staff in implementation of mission activities.

- Protection and maintenance activities- The maintenance and protection of existing forest cover is as much important as the encouraging new plantation and treatment of degraded area. Two to three chowkidars will be selected and paid under mission activities and they will be responsible for maintenance of existing works and will support the field staff in fire-watching and protection activities in the area. They will also encourage more and more people to join hands with the forest department to protect and enhance forest cover.

5.9.11 Cross cutting interventions proposed:-

Improving fuel-wood efficiency and promoting alternative energy sources. Distribution of pressure cooker, promotion of solar lamps, solar cooker, bio-gas plants depending on the need will be facilitated in the selected area.

5.9.12 Livelihood improvement activities proposed:-

Promotion of livelihood opportunities -Various livelihood activities such as Dairy Farming, NTFP based livelihoods, general stores, sewing machine, Poultry farming, Dona pattal manufacturing and Fisheries will be taken in all villages along with skill development.

5.9.13 Area proposed to be treated under different sub missions in Dhar District:-

Under different submissions following area is proposed to be treated :-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	1205	1165	1125	0	0	3495
2.	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	66	55	44	0	0	165
3.	Submission 1 (c) Restoration of grasslands	635	628	621	0	0	1884
4.	Submission 3(a) Plantation in urban and peri urban areas	8	7	5	0	0	20
5.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	153	147	140	0	0	440
6.	Submission 4(b) Agro-forestry and social forestry in Shelterbelt plantation	40	30	25	0	0	95
7.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	49	46	42	0	0	137
	Total	**2156**	**2078**	**2002**	**0**	**0**	**6236**

Maximum emphasis has been given to treat the degraded and open area where there is plenty of root stock.

5.9.14 Budget for Dhar district:-

Submission wise budget summary for Dhar district is given below-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	583.92	50.985	222.22	857.12
2017-18	1173.37	42.24	425.46	1641.07
2018-19	1429.59	36.135	513.00	1978.73
2019-20	971.27	30.195	350.51	1351.98
2020-21	480.34	23.76	176.43	680.53
Total	**4638.48**	**183.32**	**1687.63**	**6509.43**

A total of Rs.65.09 cr. is proposed to be spent on the selected activities.

Details of budget for Dhar Division is given in given Annexure xi.

5.10 Landscape Plan Jhabua District

Jhabua is a predominantly tribal district located in the western part of Madhya Pradesh. Panchamahal and Baroda districts of Gujrat State, Banswara district of Rajsthan State and Dhar and Ratlam districts of Madhya Pradesh surround it.
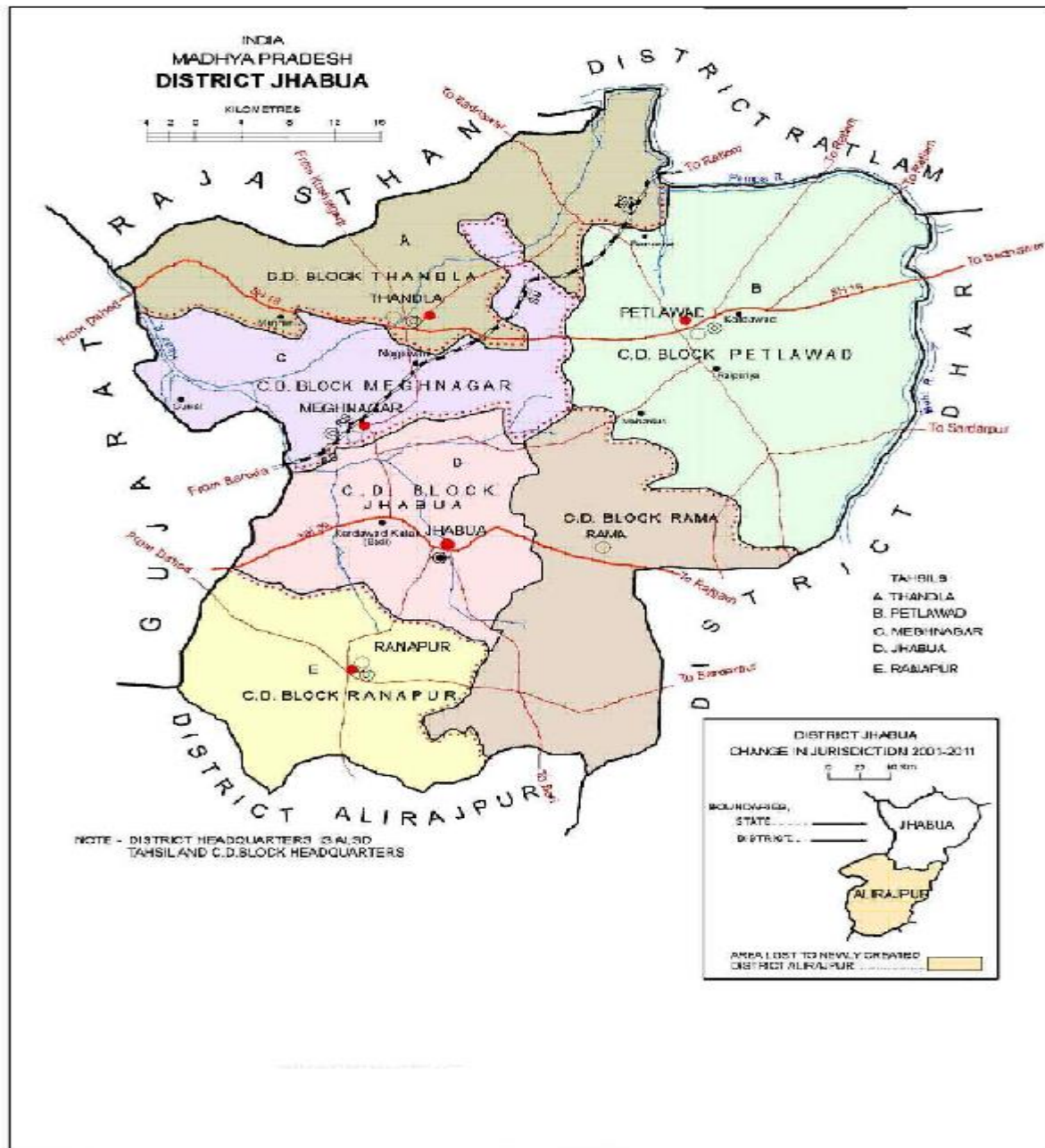
The district is situated between 21 ^{0} 55' to 23^0 14' north latitude and 74 ^{0} 1' to 75 ^{0} 01' east longitude and has an area of 3600 sq. km. River Narmada forms the southern boundary of the district. Most part of Jhabua is devoid of a good forest cover because of low fertility of land and soil. Jhabua is sparsely populated area with the total population of 10,25,048 according to 2011 census. The area suffers from poor and skeletal soils with shallow to very shallow depth and erratic rainfall, high temperature. The area comes under Agro climatic zone namely Jhabua hills. Climate is generally moderate and seasons are well defined. The summers are hot, winters are short and the monsoon season is generally pleasant. The average annual rainfall in the district is 855.5mm. Most of the rainfall occurs in monsoon season while there is also a little of rainfall in winter season .A hot summer and

general dryness characterize the climate of Jhabua district, except during the southwest monsoon season. The normal annual mean maximum temperature is 32.8^0 c and normal annual mean minimum temperature is 19.1^0 c. Jhabua district is mainly a hilly region covered with a chain of hills known as "The Vindhyachal" which extends northwards towards Udaipur in Rajasthan. The maximum elevation of 777 m. above mean sea level is recorded in the district. The general trends of the hills are in east-west direction. Jhabua district lies in two major basins, the Mahi in the north and the Narmada in the south. The Narmada River forms the southern boundary of the district with a westerly flow of water. The major tributaries having their confluence with the Narmada are Hatni, Ankhar, Sukar, Orsang, Heran, Kara and Bagh. Narmada river has a length of 50 Km. In the district and along with its tributaries drains 48% of the geographical area. The Mahi River forms northern and northeastern boundary of the district. It has a length of 67 Km. Within the district limits and along with its left bank tributaries. The Anas and Pampawati drains 52% of the geographical area of the district. The Anas river with its tributaries Like Mod, Sapan and Sunar, Negaria and Pat covers 38% of the geographical area of the district. The variation in climatic condition, topography and lithology in Jhabua district has played a significant role in the formation of soil which has resulted from the physical and chemical weathering of the parent rock. Black cotton soil has been derived from the parent basaltic rock under semi-arid conditions. These soils are clay to loamy clay in texture, having clay contents of 40% to 60% mixed with red and yellow soil.

The district is predominantly a tribal district with Bhil, Bhilala, Patel being the main tribes. The district was formed in 1948 and later on in May 1998 Jhabua district was divided into two parts namely Jhabua and Alirajpur. The district is highly drought prone and degraded wasteland form the matrix of Jhabua. Based on type of geoformations, the district can be divided into three distinct parts:-

1- Malwa Plateau
2- Vindhyan Scarp
3- Narmada Valley

Malwa Plateau forms the major part of the district. The major minerals found in the district are Dolomite, Limestone, Graphite, Manganese and Quartz. Jhabua is the only forest division in the district and has been selected for the purpose of GIM.

5.10.1 Forest:-

Forests of Jhabua are mainly Southern Tropical Dry Deciduous Mixes forest. The main species are Dhawda, Palash, Lendia, Salai, Moyan, Anjan. Most of the forests of Jhabua district are degraded forest with vast stretches of denuded hills. The distribution of the forest area in the division is as follows:-

Reserve Forest	Protected Forest	Unclassified Forest	Total (sq.km.)
520.926	153.256	60.770	734.952

5.10.2 Wild life:-

Before independence Jhabua was ruled by earstwhile small state rulers and chieftans who used to maintain game areas for hunting purposes. But with depletion of forest most of the wild life has vanished and there is no significant wild life left in the district. Only hyena, jackal, hare etc. can be seen

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and sometime news about presence of leopard is also heard. The terrain of the forest land still bear areas which can become suitable for the wild life .

5.10.3 <u>Dependence on Forest</u>:-

There are 783 revenue villages in Jhabua district out of which 355 villages are situated within 5 km. periphery of the forest area. According to working plan estimates following forest produce are required to meet the annual demand of the population:-

Sr No.	Item	Annual Requirement
1	Timber	5256 cmt.
2	Fuelwood	2331801 qt.
3	Bamboo	1539067 no.
4	Poles	522602 no.

Demand of forest produce is huge but the forests of the district are unable to meet this demand. Similarly for fodder also the difference between demand and supply is tremendous. There are 1207928 cattle in the district which make 1197273 cattle units whereas the grazing carrying capacity of the forest is only 213135 cattle units . Therefore the grazing pressure is 5.62 times more and this has put a great impact on the health of the forest also.

5.10.4 <u>Joint Forest Management</u>:-

Out of the total 783 villages in the Jhabua district, 355 Villages lie in the vicinity of the forest. To ensure these villagers participation in the protection and management of the forest about 292 JFMCs have been constituted in these villages. An area of 654.02sq .km. has been assigned to these JFMCs for forest protection and management. Since most of the area of the division is under stocked and blank forest, all the JFM committees are village forest committees.

5.10.5 <u>Demography</u>:-

As per census 2011 data, the population dimension of the district are as follows :-

Total area of the district		3600 sq. km.
Literacy rate		43.3 %
No. of villages		783
No. of households		193116
Population	Rural	933065
	Urban	91983
	Total	1025048
Population	Male	515023
	Female	510025
	Total	1025048
Scheduled caste population		17427
Scheduled tribe population		891818

Jhabua is predominantly a tribal district with 87 % of the population belonging to Scheduled Tribe. All the six Community Blocks in the district are designated as Tribal Blocks .These are Jhabua, Meghnagar, Petlawad, Rama, Ranapur and Thandla. About 22.45 % of the worker population i.e. 111649 work as agricultural labourers.

5.10.6 L-2 Landscapes selected in Jhabua District:-

Following 3 milli watersheds of the division have been selected as L2 landscapes:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5E2A5s	0	483.008	2275.973	2758.981	6104.404	8863.385
2.	5E2A7j	0	18.361	1087.354	1105.715	4050.499	5156.214
3.	5E2C7k	0	0	834.601	834.601	5742.74	6577.341
Total		**0**	**501.369**	**4197.928**	**4699.297**	**15897.64**	**20596.94**

Thus total 20596.94 ha. area of these landscapes have been selected for treatment under GIM. These 3 milli-watersheds are the operational unit for implementation of GIM. There is no dense forest in the landscapes selected .Even the open forest area is also very little, most of the area is blank and non forest area. All the 3 milliwatersheds possess forest as well as non forest area. These 3 milliwatersheds have 20 microwatersheds out of which 19 microwatersheds have forest as well as non forest area whereas remaining one micro-watershed is completely in non forest area .

Map Composed by: NIC   Source: Soil& Land Use Survey Of India, SOI

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI
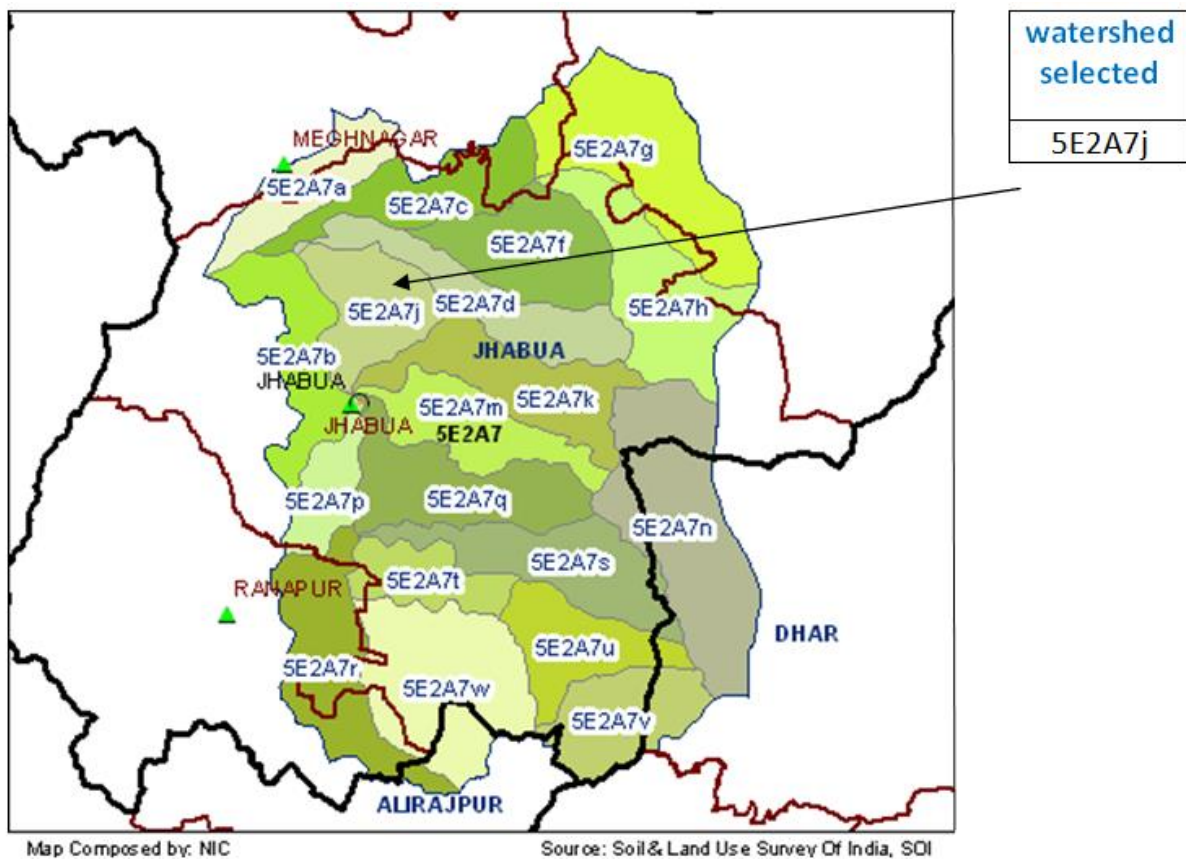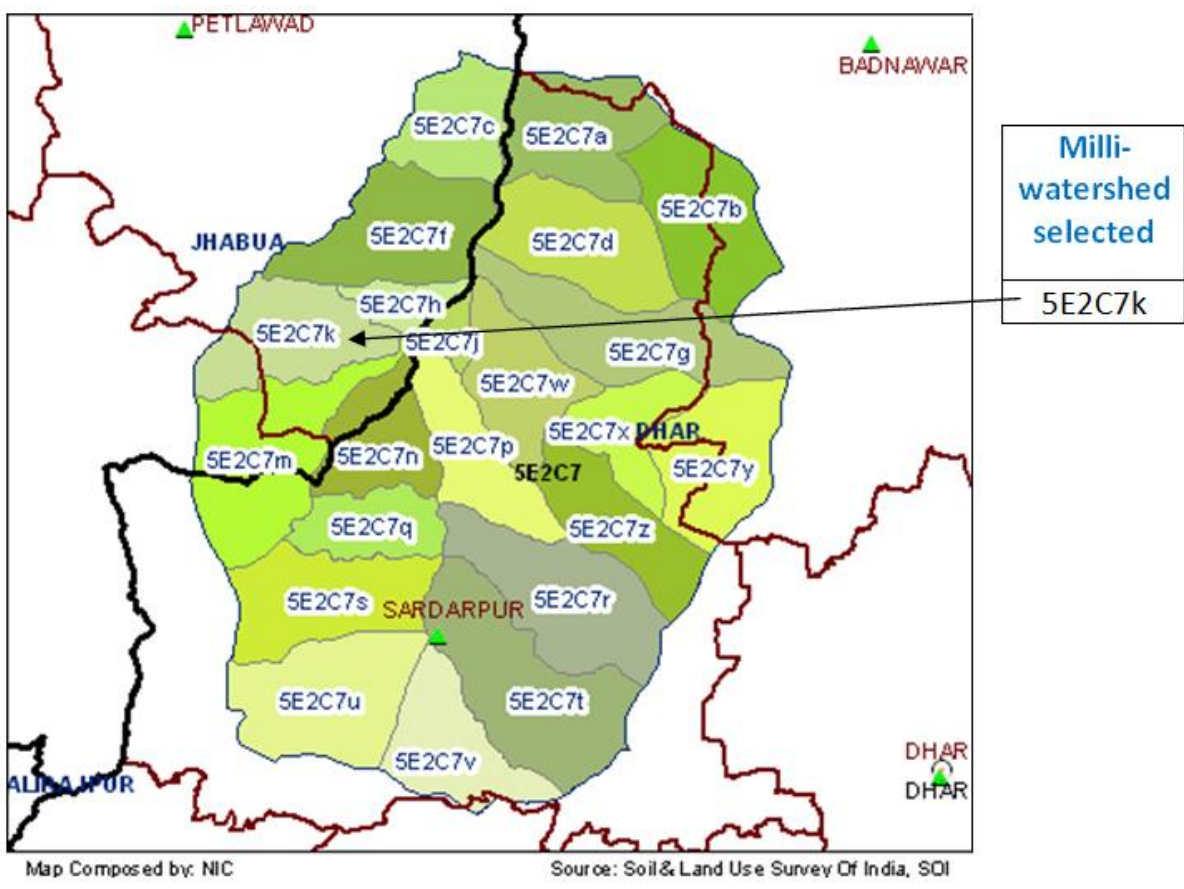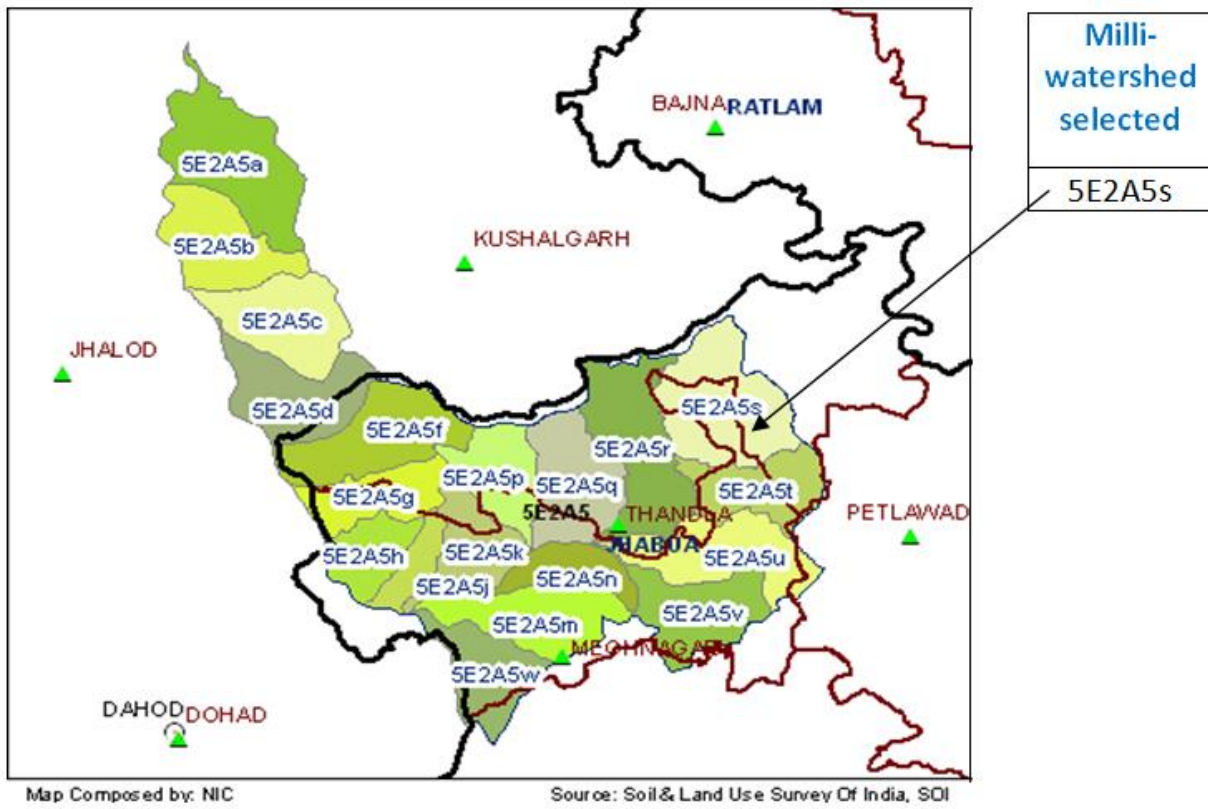
5.10.7 L3 landscapes selected in Jhabua District:-

The 3 milli-watersheds selected as L2 landscapes comprises of 20 micro-watersheds which are the working unit of the GIM. All the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

5.10.7.1 Milli-watershed no. 5E2A5s:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5E2A5s1	0	168.339	283.448	451.787	659.636	1111.423
2.	5E2A5s2	0	70.42	566.919	637.339	726.227	1363.566
3.	5E2A5s3	0	162.245	105.492	267.737	665.211	932.948
4.	5E2A5s4	0	48.086	633.405	681.491	545.991	1227.482
5.	5E2A5s5	0	0.545	140.313	140.858	496.589	637.447
6.	5E2A5s6	0	18.765	261.5	280.265	652.44	932.705
7.	5E2A5s7	0	4.065	225.325	229.39	904.152	1133.542
8.	5E2A5s8	0	10.543	59.571	70.114	1454.158	1524.272
	Total	0	483.008	2275.973	2758.981	6104.404	8863.385

5.10.7.2 Milli-watershed no. 5E2A7j:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5E2A7j1	0	0	232.937	232.937	698.063	931
2.	5E2A7j2	0	0	139.439	139.439	438.19	577.629
3.	5E2A7j3	0	0	197.405	197.405	781.242	978.647
4.	5E2A7j4	0	8.696	257.366	266.062	498.302	764.364
5.	5E2A7j5	0	1.078	95.323	96.401	902.071	998.472
6.	5E2A7j6	0	8.587	164.884	173.471	732.631	906.102
	Total	0	18.361	1087.354	1105.715	4050.499	5156.214

5.10.7.3 Milli-watershed no. 5E2C7k:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5E2C7k1	0	0	170.998	170.998	685.72	856.718
2.	5E2C7k2	0	0	330.316	330.316	468.553	798.869
3.	5E2C7k3	0	0	30.699	30.699	1201.14	1231.839
4.	5E2C7k4	0	0	228.536	228.536	1328.534	1557.07
5.	5E2C7k5	0	0	74.052	74.052	881.795	955.847
6.	5E2C7k6	0	0	0	0	1176.998	1176.998
	Total	0	0	834.601	834.601	5742.74	6577.341

5.10.8 Reason for selection of L2 landscapes:-

- The area is ecologically important area and falls in the catchment area of Mahi and   Narmada river.
- Predominantly tribal population.
- Most of the population in the landscape lives below poverty line.
- The livelihood opportunities are less. There are no industries working in the area. The level of dependence on forest is high.
- Income from agriculture is meager. The percentage of irrigated crop area is very small.
- Forest land is only 21.33 % of total geographical area which is far below the standards of 33 %.
- Stocked and under stocked forest is very little in the division. It clearly indicates the problem of degradation of forest cover.
- Tremendous grazing pressure on forest.
- Area is under severe soil erosion and mostly denuded hills are seen.

5.10.9 Possible solutions to enhance forest cover,improve ecosystem services and address the drivers of degradations:-

- Effective management to combat biotic pressure - It will be achieved through efficient fire management, regularizing the grazing, control on illicit felling, enhancing fodder, fuel wood, bamboo, small and NTFP production through plantation of selective species.

- Enhancement of forest cover in forest and non forest area - It will be achieved through plantation in forest area and through promotion of agroforestry in non forest area.

- Since area is facing severe soil erosion large scale soil and water conservation works will be taken up on the basis of watershed treatment methodology i.e. the treatment from ridge to valley of the watershed.

- Pasture development.

- Reduction in the degree of dependence on forest- Reduction in the degree of dependence on forest will be achieved through promotion of alternate energy resources such as biogas, solar devices, LPG and fuel efficient stoves and introduction of various community livelihood opportunities and plantation of the species which are suitable to increase the fuel, fodder, small timber and NTFP production.

5.10.10 Proposed interventions:-

- Strengthening of Forest department and JFMCs.

- Appointing a spear head Team of forest personnel and JFMC members.

- Protection and maintenance activities.

5.10.11 Cross cutting interventions proposed:-

- Improving fuel-wood efficiency and promoting alternative energy sources.

5.10.12 Livelihood improvement activities proposed:-

- Various livelihood activities such as Dairy Farming, NTFP based livelihood, sewing machine, Poultry farming, Dona pattal manufacturing and Fisheries will be taken in all villages.

5.10.13 Area proposed to be treated under different sub missions in Jhabua District:-

The description of the area proposed to be treated under various sub mission is as follows :-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	272	244	240	0	0	756
2	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	25	25	25	0	0	75
3	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	448	426	410	0	0	1284
4	Submission 1 (c) Restoration of grasslands	390	375	345	0	0	1110
5	Submission 3(a) Plantation in urban and peri urban areas	7	7	6	0	0	20
6	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	805	785	765	0	0	2355
7	Submission 4(b) Agro-forestry and social forestry in Shelterbelt plantation	50	40	25	0	0	115
8	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	195	175	155	0	0	525
	Total	**2192**	**2077**	**1971**	**0**	**0**	**6240**

Plantation on forest area and restoration of grassland would be taken up in a large quantum which will not only lead to increased forest produce availability but help in soil conservation also.

5.10.14 Budget for Jhabua district:-

Submission wise budget summary for Jhabua district is given below-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	798.36	24.42	287.97	1110.75
2017-18	1592.33	19.8	564.25	2176.38
2018-19	1909.14	15.015	673.46	2597.61
2019-20	1291.46	10.56	455.71	1757.72
2020-21	641.78	6.6	226.93	875.32
Total	**6233.07**	**76.40**	**2208.31**	**8517.78**

An amount of Rs.85.17 cr has been envisaged to be spent on the activities proposed during the project period.

Details of budget for Jhabua Division is given in given Annexure xii.

5.11 <u>Landscape Plan Barwani District</u>

Barwani district is located in the western part of Madhya Pradesh occupying an area of 5427 sq. km. On the south and west side district makes boundary with Dhule district of Maharashtra.
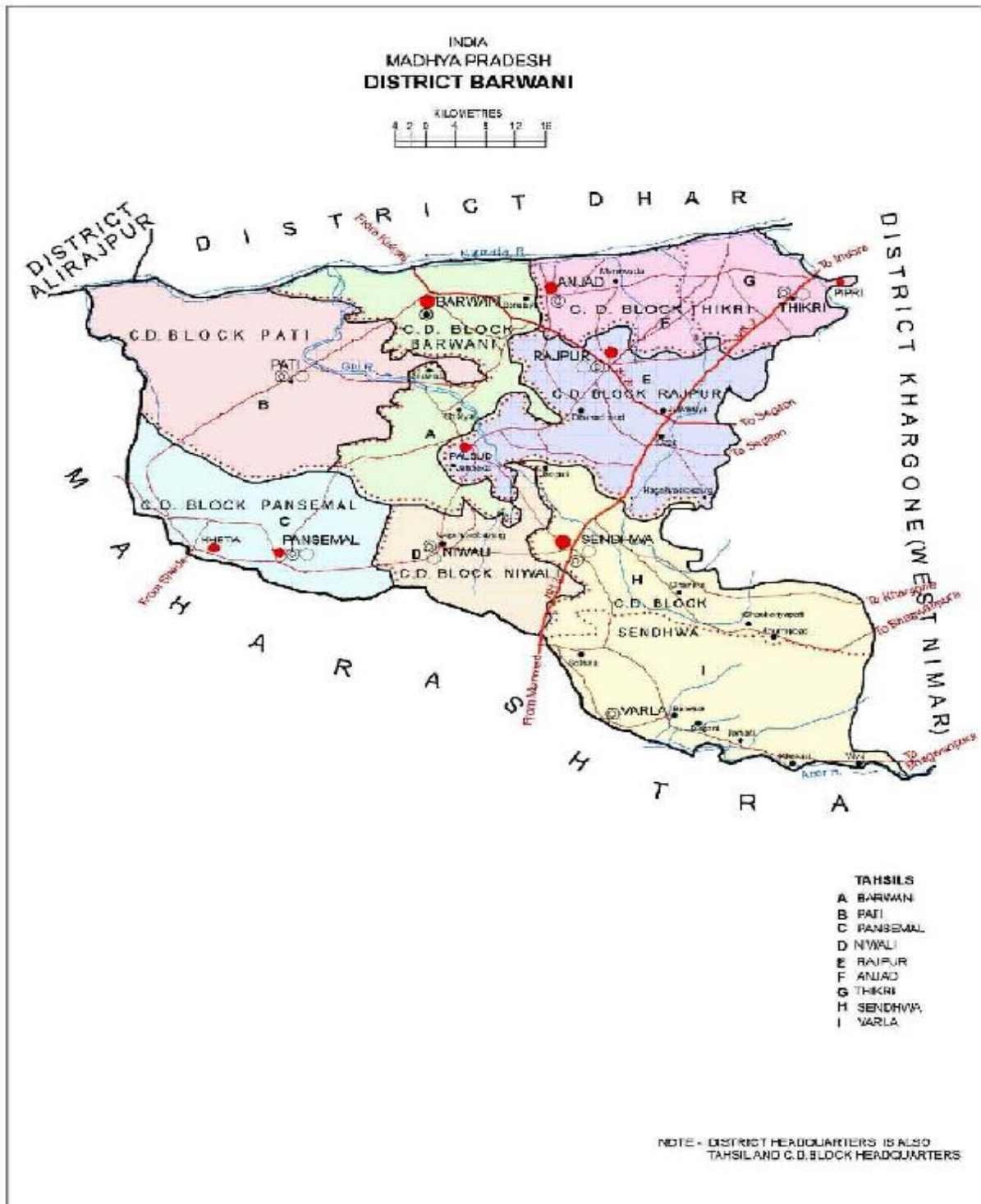
The district extends between the parallels of latitude 21^0 22' to 22^0 22' north and meridian of longitude 74^0 24' and 75^0 30' east. Physically the district comprises of three distinct natural divisions namely, Narmada valley in the northern part, uplands along southern and western margin (Satpura range and highly dissected Deccan plateau) and narrow belt of scarp ridges (Vindhyan Hills Range). The area of the district plays undulating topography which includes highly dissected plateau, linear ridges, residual hills and low lying plains. The highest elevation in the district is 1033 meter above mean sea level south of Ramgarh fort in Sendhwa block. About 88% of the district lies in Narmada Basin and 12%

in Tapti Basin. The district area is drained mainly by Narmada river and its tributaries like Goi and Deb. No major tributary of Tapti flows in the district. All of these tributaries flow from south to north and join Narmada. Similarly, tributaries like Tori, Churi, Dudhikheda etc. flow from north to south. Major rivers are perennial to semi-perennial. The climate of the district on the whole is tropical and dry except during monsoon. The annual rainfall is 738.64 mm. May is the hottest month of the year when general temperature goes up to 42^0 c, occasionally it goes up to 47^0 c. The soil of Badwani district is classified as medium black cotton soils containing 50% silt and clay together. Mostly the soils are lighter, open and drained. Alluvial type of soil is found on both side of Narmada and in some patches on the banks of tributaries like Goi,Deb and Bour.

In Barwani district there are two territorial forest divisions namely Barwani and Sendhwa forest division .Both of these divisions have been selected for GIM purpose.

5.11.1 Forest:-

As per Champion and Seth classification the forest are mainly Southern Tropical Very dry deciduous teak forest ,Dry teak forest, Southern dry mixed deciduous Forest, Boswellia forest, Hardwickia forest and Dry Deciduous scrub forest .A large chunk of the forest area in these division is either blank area or under encroachment .The problem of encroachment on the forest land is alarming.In some area of Pati and Bokrata range of Barwani division there are some patches of young Teak and Mixed forest where other prominent tree species are Dhawda, Tendu, Lendia ,Khair, Palash,Anjan,Bel,Baheda,Kullu,Haldu,Salai,etc.In   this   landscape   Sirali,Marorfalli,Bekal,Dudhi ,Ber,Lantana   are   the   prominent   shrub   species.Similarly   herb   species   comprises   of Chirota,Vantulsi,Gokhru,etc.There are no bamboo forest in the landscape. The regeneration of prominent species in the forest is not satisfactory.

The area wise distribution of the forest is as follows :-

Sr.No.	Division	Reserve Forest	Protected Forest	Other Forest	Total (ha.)
1	Barwani	87488.58	1161.43	1.08	88651.09
2	Sendhwa	103951.69	19.50	12.86	103984.05
	Total	191440.27	1180.93	13.94	192635.14

5.11.2 Wildlife:-

Most of the forest area is either blank forest or under encroachment and does not provide a suitable habitat for the sustenance of the wild life. Due to absence of suitable habitats the position of wild life in the area is not worth mentioning.With the construction of Sardar Sarovar Dam on Narmada some patches have emerged as suitable habitat to support aquatic fauna.The main terrestrial fauna of the landscape is jackal,fox,lengur,hyena and rare presence of leopard.

5.11.3 Dependence on Forest:-

There are 696 villages in Barwani district out of which 283 villages in Barwani forest division and 257 villages in Sendhwa division are located within 5 km distance from the forest. Thus most of the villages in these two forest divisions are situated near forest which shows the biotic pressure on the forests of these divisions. As per working plan estimates the annual requirment of the forest produce in these two divisions are as follows:-

Division	Fuel wood	Timber	Bamboo
Barwani	180895cmt	17740 cmt	646098 no.
Sendhwa	263658 qt.	7502cmt	403474 no.

Besides, there is huge pressure of cattles for grazing on the forest land.

5.11.4 Joint Forest Management :-

There are 283 villages in Barwani division and 257 villages in Sendhwa division which are located in a periphery of 5 km. from forest. Thus out of 696 villages in the district 540 villages are located near forest area. The activities of these villages have direct impact on forest. So to ensure their cooperation in forest protection and management, following JFMCs have been constituted in these divisions :-

Division	Forest protection committee	Village forest committee	Eco development committee	Total
Barwani	0	132	0	132
Sendhwa	0	87	0	87
Total	**0**	**219**	**0**	**219**

Since there is not much dense forest in the district, there is no forest protection committee. About 839.09 sq. km. forest area in Barwani and 399.05 sq. km. area in Sendhwa division has been assigned to these JFMCs.

5.11.5 Demography:-

As per 2011 census the population statistics of the district is as follows:-

Total area of the district		5427 sq. km.
Literacy rate		49.1 %
No. of villages		696
No. of households		242234
Population	Rural	1181812
	Urban	204069
	Total	1385881
Population	Male	699340
	Female	686541
	Total	1385881
Scheduled caste population		87991
Scheduled tribe population		962145

Barwani is predominantly a tribal district with tribal population constituting 69.42 percent of total population. Bhil ,Bhilala,Patel are the main tribe. Scheduled caste population is only 6.35 %. The main occupation in the district is agriculture with 40.86% people working as agricultural laboureres.

5.11.6 L-2 Landscapes selected in Barwani District:-

Following 3 milli watersheds of Barwani division and 2 milli watersheds of Sendhwa division have been selected as L2 landscapes:-

Barwani Division:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D3A4t	0	161.812	3044.122	3205.934	3060.037	6265.971
2.	5D3A4n	0	343.882	2626.965	2970.847	1675.05	4645.897
3.	5D3A4a	48.986	852.209	2683.704	3584.899	3721.338	7306.237
Total		48.986	1357.903	8354.791	9761.68	8456.425	18218.11
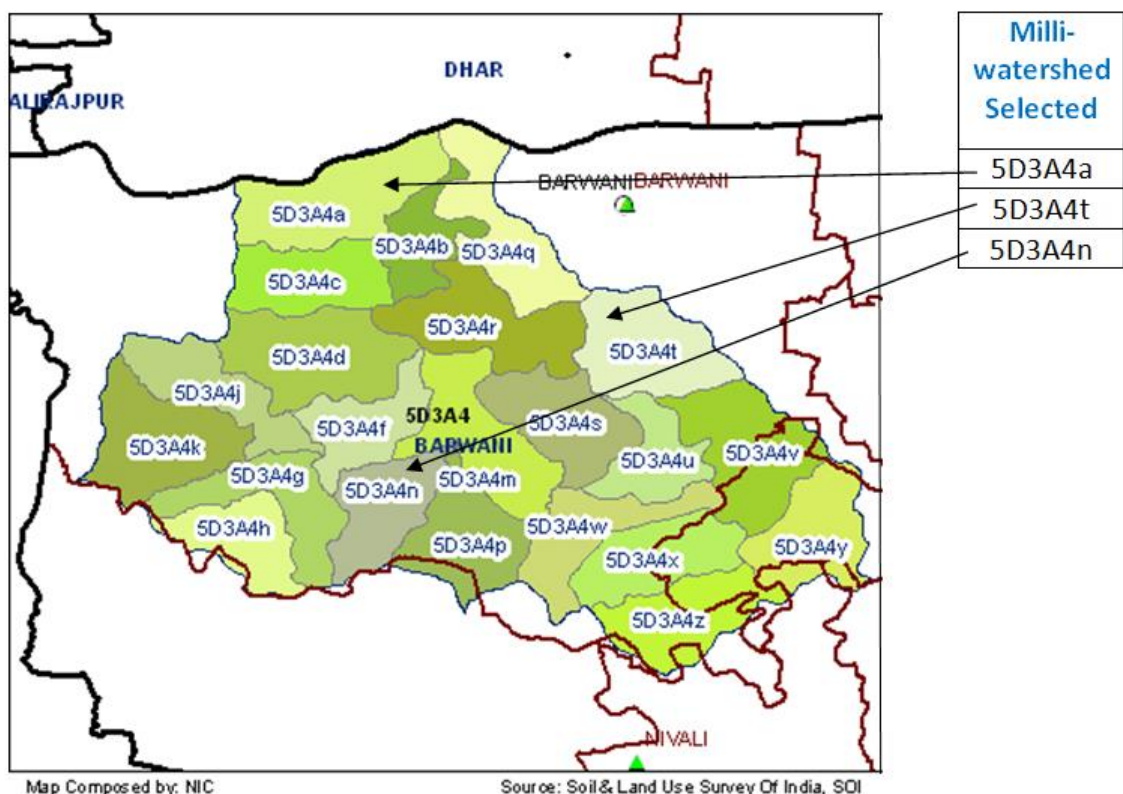
Sendhwa Division:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D3B4g	197.331	0	4348.909	4546.24	38.173	4584.413
2.	5C2A6k	0.004	1613.477	1385.405	2999.133	4125.226	7124.359
Total		197.335	1613.477	5734.314	7545.373	4163.399	11708.77

Thus total 29926.88 ha. area of these landscapes have been selected for treatment under GIM. These 5 milli-watersheds are the operational unit for implementation of GIM. There is very little dense forest in the landscapes selected .Even the open forest area is also very little, most of the area is blank and non forest area. All the 5 milliwatersheds possess forest as well as non forest area. These 5 milliwatersheds have 32 microwatersheds out of which 22 microwatersheds have forest as well as non

forest area whereas remaining seven are completely in forest area whereas other three micro-watershed is completely in non forest area .
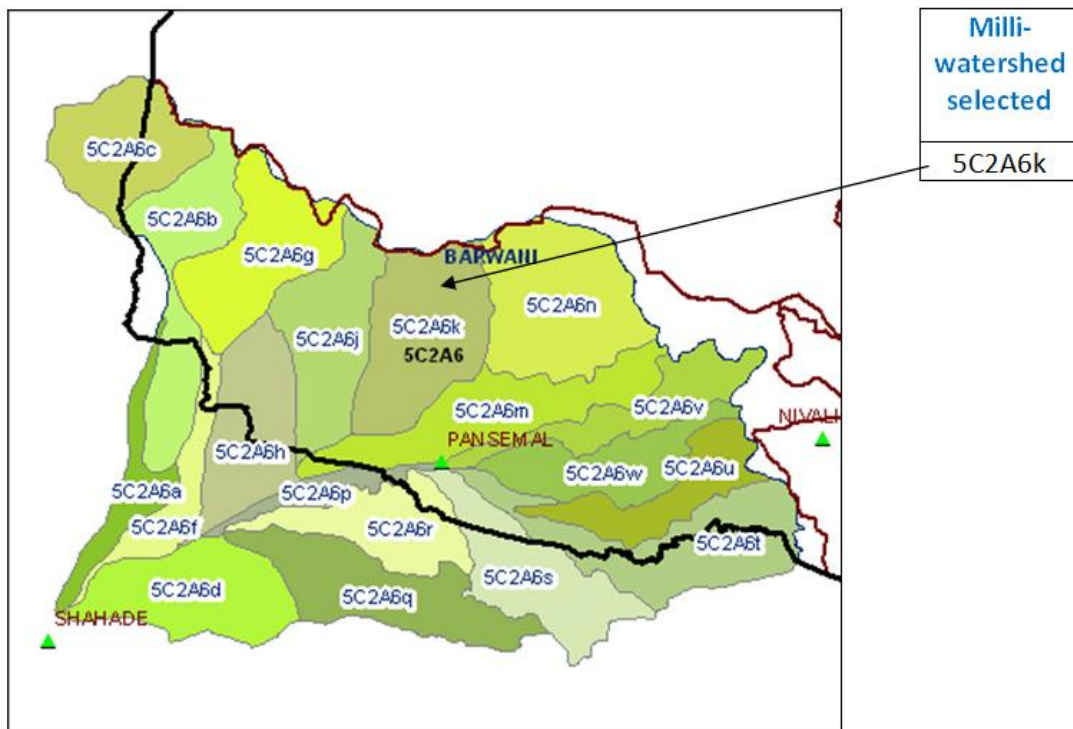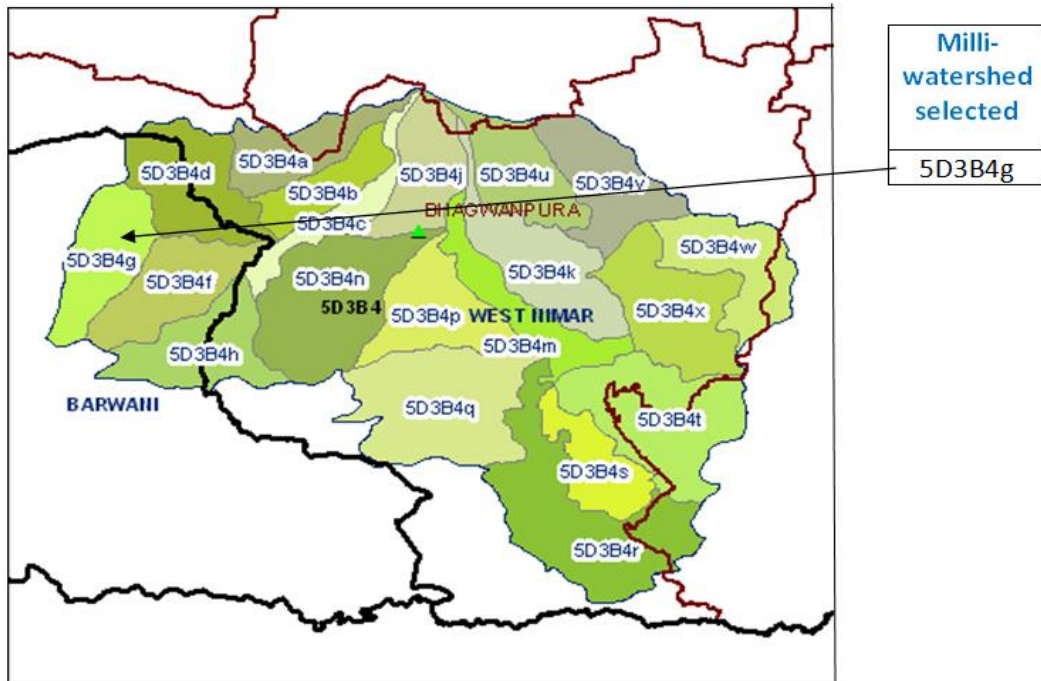
Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

5.11.7 L3 landscapes selected in Barwani District.

The 5 milli-watersheds selected as L2 landscapes have further been divided into total 32 micro-watersheds which are the working unit of the GIM. All the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

Barwani Division:-

5.11.7.1 Milli-watershed no 5D3A4t:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D3A4t1	0	4.656	384.198	388.854	308.594	697.448
2.	5D3A4t2	0	17.767	917.513	935.28	0.707	935.987
3.	5D3A4t3	0	10.283	147.929	158.212	738.154	896.366
4.	5D3A4t4	0	120.242	658.184	778.426	0.755	779.181
5.	5D3A4t5	0	0	0	0	967.877	967.877
6.	5D3A4t6	0	4.69	586.505	591.195	258.902	850.097
7.	5D3A4t7	0	4.174	349.793	353.967	785.048	1139.015
Total		**0**	**161.812**	**3044.122**	**3205.934**	**3060.037**	**6265.971**

5.11.7.2 Milli-watershed no 5D3A4n:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D3A4n1	0	0	0	0	417.611	417.611
2.	5D3A4n2	0	0	276.004	276.004	273.688	549.692
3.	5D3A4n3	0	0	864.443	864.443	53.007	917.45
4.	5D3A4n4	0	0	154.182	154.182	755.633	909.815
5.	5D3A4n5	0	147.314	425.367	572.681	156.944	729.625
6.	5D3A4n6	0	0	561.656	561.656	9.847	571.503
7.	5D3A4n7	0	196.568	345.313	541.881	8.32	550.201
Total		**0**	**343.882**	**2626.965**	**2970.847**	**1675.05**	**4645.897**

5.11.7.3 Milli-watershed no5D3A4a:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D3A4a1	0	213.197	15.921	229.118	1108.949	1338.067
2.	5D3A4a2	0	157.681	295.521	453.202	413.293	866.495
3.	5D3A4a3	0	7.634	895.586	903.22	485.085	1388.305
4.	5D3A4a4	48.986	33.721	160.951	243.658	352.992	596.65
5.	5D3A4a5	0	72.073	848.714	920.787	5.117	925.904
6.	5D3A4a6	0	135.246	255.514	390.76	864.465	1255.225
7.	5D3A4a7	0	232.657	211.497	444.154	491.437	935.591
Total		**48.986**	**852.209**	**2683.704**	**3584.899**	**3721.338**	**7306.237**

Sendhwa Division:-

5.11.7.4 Milli-watershed no. 5D3B4*g*:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D3B4g1	21.43	0	1294.453	1315.883	0	1315.883
2.	5D3B4g2	0	0	1254.313	1254.313	0	1254.313
3.	5D3B4g3	169.903	0	723.691	893.594	38.173	931.767
4.	5D3B4g4	5.998	0	1076.452	1082.45	0	1082.45
	Total	**197.331**	**0**	**4348.909**	**4546.24**	**38.173**	**4584.413**

5.11.7.5 Milli-watershed no. 5C2A6k:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5C2A6k1	0.004	153.15	382.181	535.582	602.383	1137.965
2.	5C2A6k2	0	0	0	0	862.287	862.287
3.	5C2A6k3	0	347.801	227.053	574.854	334.428	908.282
4.	5C2A6k4	0	32.152	80.872	113.024	728.273	841.297
5.	5C2A6k5	0	358.936	59.143	418.079	746.229	1164.308
6.	5C2A6k6	0	177.792	0	177.792	772.33	950.122
7.	5C2A6k7	0	543.646	636.156	1179.802	79.296	1259.098
	Total	**0.004**	**1613.477**	**1385.405**	**2999.133**	**4125.226**	**7124.359**

5.11.8 Reason for selection of L2 landscapes:-

- The area of the landscape is under degradation due to denuded hills. Most of the sites are having open land and there is scope for forestry work.
- Forest land is devoid of sufficient forest cover which is leading to soil erosion. Due to high degree of slope combined with degraded nature of forest area, this area is prone to high degree of soil erosion.Introducing plants on barren land will be helpful to maintain the forest canopy.
- This area falls in the catchments area of Narmada and Mahi River.
- Forest area is facing severe problem of illegal encroachment.
- Scheduled area with dominant tribal population. About 69% of the population belongs to Scheduled Tribes.
- The livelihood opportunities are less and there are no industries working in the area. Level of dependency on forest is high.
- Agriculture is the major source of income but the percentage of irrigated crop area is very less.
- Due to human interference mode of succession upon this area is xerophytic succession. Human interference & uncontrolled grazing is one of the major threats for new recruits of the plants. Due to grazing new vegetation is unable to make a new forest canopy in the area.

- Most of population in the area is poor and they depend on the forest product and forestry labor work for livelihood.

-The forests in this area are projected to be impacted by climate change both in the short-term scenario (2030s) and long term scenario (2080s).

- Preperatory activities for GIM were undertaken in Barwani Division.

5.11.9 Possible solutions to enhance forest cover, improve ecosystem services and address the drivers of degradations:-

- Effective management to combat biotic pressure.

- Enhancements of forest cover in forest and non forest area.

- Soil and water conservation.

- Reduction in the degree of dependence on forest.

- The forest area will be protected against fire, grazing will be regulated. The areas will be treated for fodder and grass development by seed sowing of grasses and fodder species and by plantation of fodder trees and shrubs plants.

- Grasslands and pasture land development works to be taken up on large scale.

5.11.10 Proposed interventions:-

- Strengthening of Forest department and JFMC.

- Appointing Team of Community foresters at JFMC level.

- Protection and maintenance activities.

- Creation of livelihood opportunities.

5.11.11 Cross cutting interventions proposed:-

- Improving fuel-wood efficiency and promoting alternative energy sources. Distribution of pressure cooker, promotion of solar devices, Bio-gas plants depending on the need will be facilitated in the selected area.

5.11.12 Livelihood improvement activities proposed:-

-Various livelihood activities such as Dairy Farming, NTFP based livelihoods, Kirana store, sewing machine, Poultry farming and Dona pattal manufacturing will be taken in all villages.

5.11.13 Area proposed to be treated under different sub missions in Barwani District:-

Badwani Division:-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1	Submission 1 (a) Moderately dense forest cover, but showing degradation	20	18	7	0	0	45
2	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	130	120	110	0	0	360
3	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	220	217	214	0	0	651
4	Submission 1 (c) Restoration of grasslands	1350	1340	1330	0	0	4020
5	Submission 3(a) Plantation in urban and peri urban areas	5	3	2	0	0	10
6	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	556	540	524	0	0	1620
7	Submission 4(b) Agro-forestry and social forestry in Shelterbelt plantation	15	13	10	0	0	38
8	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	118	115	112	0	0	345
	Total	**2414**	**2366**	**2309**	**0**	**0**	**7089**

Sendhwa Division:-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1	Submission 1 (a) Moderately dense forest cover, but showing degradation	110	103	102	0	0	315
2	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	707	685	669	0	0	2061
3	Submission 1 (c) Restoration of grasslands	195	180	165	0	0	540
4	Submission 3(a) Plantation in urban and peri urban areas	6	5	4	0	0	15
5	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	282	270	243	0	0	795
6	Submission 4(b) Agro-forestry and social forestry in Shelterbelt plantation	40	30	25	0	0	95
7	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	65	60	40	0	0	165
	Total	**1405**	**1333**	**1248**	**0**	**0**	**3986**

Thus a total of 11075 ha. area is proposed to be treated in the district. Maximum emphasis has been given on restoration of grasslands. To combat the advancement of xerophytic conditions, shelterbelt plantations are also being planned.

5.11.14 Budget for Barwani district:-

Submission wise budget summary for Barwani district is given below-

Badwani Division:-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	862.86	33.66	313.78	1210.30
2017-18	1761.29	26.07	625.58	2412.94
2018-19	2193.04	19.8	774.49	2987.33
2019-20	1496.51	13.365	528.46	2038.33
2020-21	735.80	7.59	260.19	1003.58
Total	**7049.50**	**100.49**	**2502.50**	**9652.48**

Sendhwa Division:-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	356.69	22.275	132.64	511.60
2017-18	706.95	18.15	253.78	978.88
2018-19	831.21	14.52	296.00	1141.73
2019-20	558.83	11.22	199.52	769.57
2020-21	279.47	7.59	100.47	387.54
Total	**2733.14**	**73.76**	**982.41**	**3789.31**

A total Rs134.41 cr. is proposed for the activities to be taken up in Barwani district. Details of budget for Barwani Division is given in given Annexure xiii and for Sendhwa Division in Annexure xiv.

5.12 Landscape Plan Sagar District

Sagar district is located between $23^0 10'$ to $24^0 27'$ north latitude and $78^0 4'$ to $79^0 21'$ East longitude in the north central region of Madhya Pradesh.
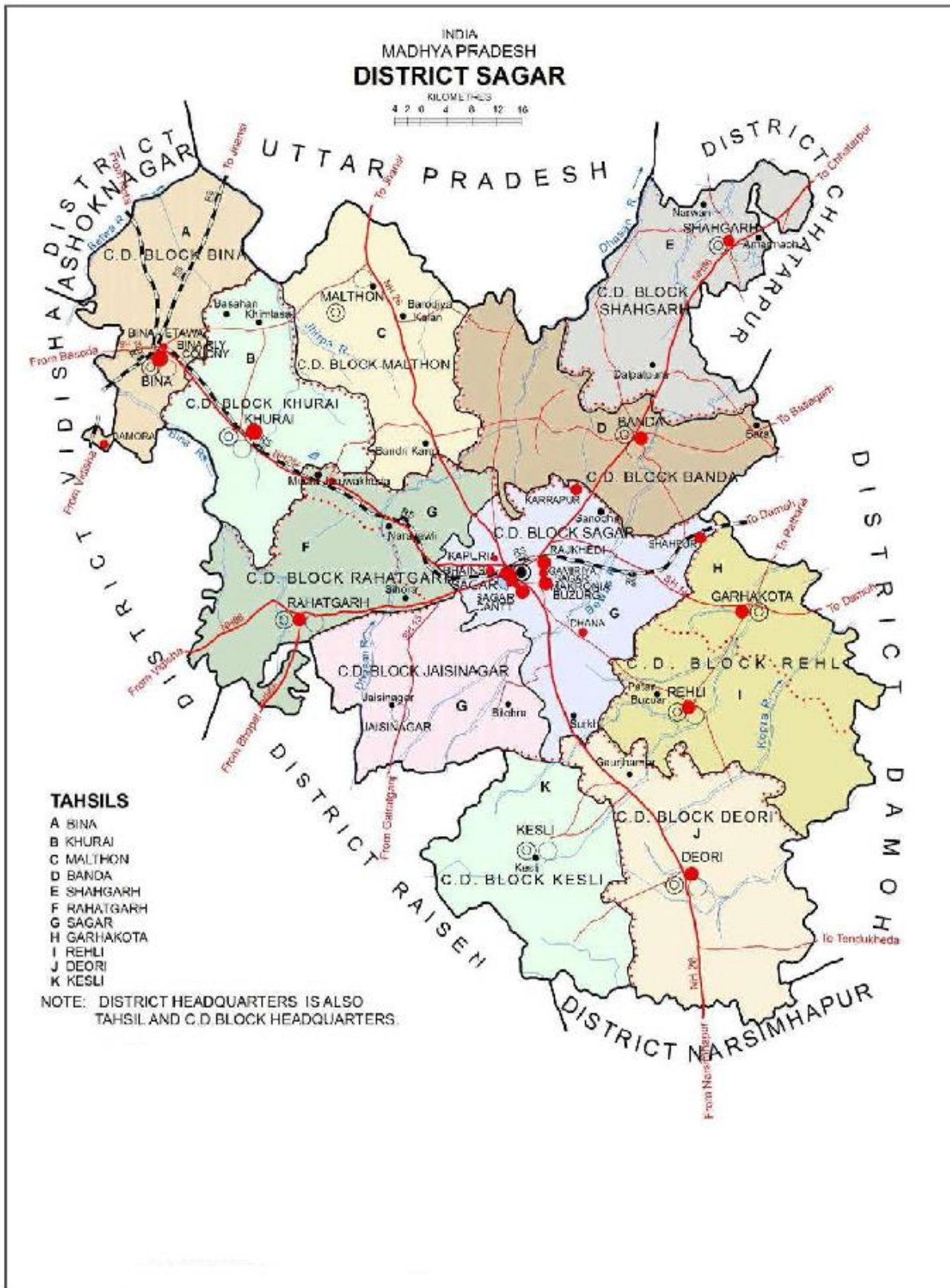
The Tropic of cancer passes through the southern part of the district. Sagar district lies at the North Eastern edge of the Malwa plateau, which widens in the south and south west. It is seperated from Narmada valley by a steep escarpment towards the south. The average elevation of the district is about 452 to 533 meter above mean sea level.

The district makes boundary with Uttar Pradesh state on the north side. Sagar district lies in an extensive plain, broken in places by low hills of the Vindhyan sandstone. It is traversed by numerous streams like Sonar, Bewas, Dhasan, Bamner and Bina rivers, all flowing in north direction to ultimately meet Ganges. The southern most tip of the district is drained by the Narmada river. However the major part of the area falls in the Ganga Basin. The drainage of the district is towards north and north east. In the southern and central part of the district the soil is black, formed by decaying trap, to the north and east it is reddish brown alluvium, clay loam occurs in the northern parts of Banda block.

The Sagar district holds a borderline subtropical humid climate with extremely hot summers, little bit cooler monsoon with rainfall and cool winters. The temperature during the month of January falls as low as 11.6^0 c which rises maximum to the level of 24.50^0 c. During summer the temperature goes up to 40.70^0 c. The normal annual rainfall is 1197 mm.

There are two territorial and one wildlife division in Sagar district .For the purpose of GIM South Sagar Division has been selected.

5.12.1 Forest :-

The forests of S. Sagar division are classified as Southern Tropical Dry Deciduous Teak Forest and Southern Tropical Dry Deciduous Mixed Forest. The forests in the division are classified as teak and mixed forest on the basis of species present in the area .The main species found in the area are Teak,Dhawda,Saja,Haldu,Tendu,Papra,Gunja,Baheda,Kusum,Achar,Aonla,Tinsa,Khair,Amaltas,   Palash, etc., as tree species and Lantana ,Karonda Jherberi,Gokhuru as shrub species.The regeneration of the prominent species in the forest is not satisfactory and to improve the regeneration plantation, seed sowing ,regeneration of degraded area is required. The area wise details of the forest in the division is as follows :-

Reserved Forest	Protected Forest	Unclassified Forest	Total (sq.km.)
521.54	548.29	8.12	1077.95

5.12.2 Wildlife:-

In S.Sagar division the presence of big carnivores like Tiger and Panther is seldom reported.Other carnivores like Hyena,Jackal,Wild Cat, Wolf are also reported.The herbivore species found in the area are Spotted deer ,Bluebull,Chinkara,Sambhar,Barking deer,Slothbear etc.

5.12.3 Dependence on Forest :-

In South Sagar division about 867 villages are situated within 5 km. distance from forest.Besides 70% population of the district is living in rural area which is dependent on forest for their various needs of forest produce. As per working plan estimation following forest produce is required to meet the annual demand of the population:-

Sr No.	Item	Requirement
1	Timber	42700 cmt.
2	Fuelwood	49 lac qt.
3	Bamboo	7.40 lac pieces

For most of their demand villagers depend on the forest which is exerting tremendous pressure on the forest.

5.12.4 Joint Forest Management :-

In South Sagar division 867 Villages lie in the vicinity of the forest .To ensure these villager's participation in the protection and management of the forest about 310 JFMCs have been constituted in these villages. An area of 1002.06 sq .km. has been assigned to these JFMCs for forest protection and management. Since much of the area of the division is under stocked and blank forest, 185 village forest committees have been constituted in such areas whereas near dense forest area 125 forest protection committees have been constituted.

5.12.5 Demography :-

As per 2011 census data the population detail of the Sagar district are as follows :-

Total area of the district		10252 sq. km.
Literacy rate		76.5 %
No. of villages		1901
No. of households		514,608
Population	Rural	1,669,662
	Urban	708,796
	Total	2,378,458
Population	Male	1,256,257
	Female	1,122,201
	Total	2,378,458
Scheduled caste population		501,630
Scheduled tribe population		221,936

The Scheduled Caste population is 21.09 % and the Scheduled Tribe population is 9.33 % of the total population of the district. About 140,458 persons which is 13.96 % of district worker population work as agricultural labourers.

5.12.6 L-2 Landscapes selected in Sagar District:-

Following 13 milli watersheds of S. Sagar division have been selected as L2 landscapes:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1E4w	52.783	1494.735	180.806	1728.324	2249.051	3977.375
2.	2C2C5k	0	635.283	119.521	754.804	5337.312	6092.116
3.	2C1E5s	103.438	283.043	410.87	797.351	3879.501	4676.852
4.	2C2G6b	1119.907	1500.567	365.549	2986.023	2917.685	5903.708
5.	2C2G6c	206.786	513.715	80.988	801.489	6017.39	6818.879
6.	2C2C6d	1102.803	1300.198	487.915	2890.916	4676.02	7566.936
7.	2C2G6f	169.048	938.922	9.458	1117.428	1941.167	3058.595
8.	2C2C6g	113.779	760.281	876.252	1750.312	3446.2	5196.512
9.	2C1E7d	0	215.301	3.968	219.269	3400.947	3620.216
10.	5D4A7g	1902.912	405.022	606.182	2914.116	3256.869	6170.985
11.	2C1D7n	900.246	324.261	118.232	1342.739	5063.227	6405.966
12.	5D4A7q	131.209	147.488	7.163	285.86	3324.913	3610.773
13.	5D4A7r	487.039	536.415	208.589	1232.043	7047.817	8279.86
Total		**6289.95**	**9055.231**	**3475.493**	**18820.67**	**52558.1**	**71378.77**

Thus the milliwatersheds selected as L2 landscapes for S.Sagar division have an area of 71378.77 ha. These 13 milli-watersheds are the operational units for implementation of GIM. All the 13 milliwatersheds possess forest as well as non forest area. These 13 milliwatersheds have 79 microwatersheds out of which 63 microwatersheds have forest as well as non forest area whereas remaining 16 microwatersheds are purely in non forest area.The forest area in the milli –watersheds is largely open forest which needs measures to increase its quality and stocking .

Map Composed by: NIC   Source: Soil& Land Use Survey Of India, SOI

Map Composed by: NIC   Source: Soil& Land Use Survey Of India, SOI

Map Composed by: NIC　　　　Source: Soil & Land Use Survey Of India, SOI

Map Composed by: NIC　　　　Source: Soil & Land Use Survey Of India, SOI

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

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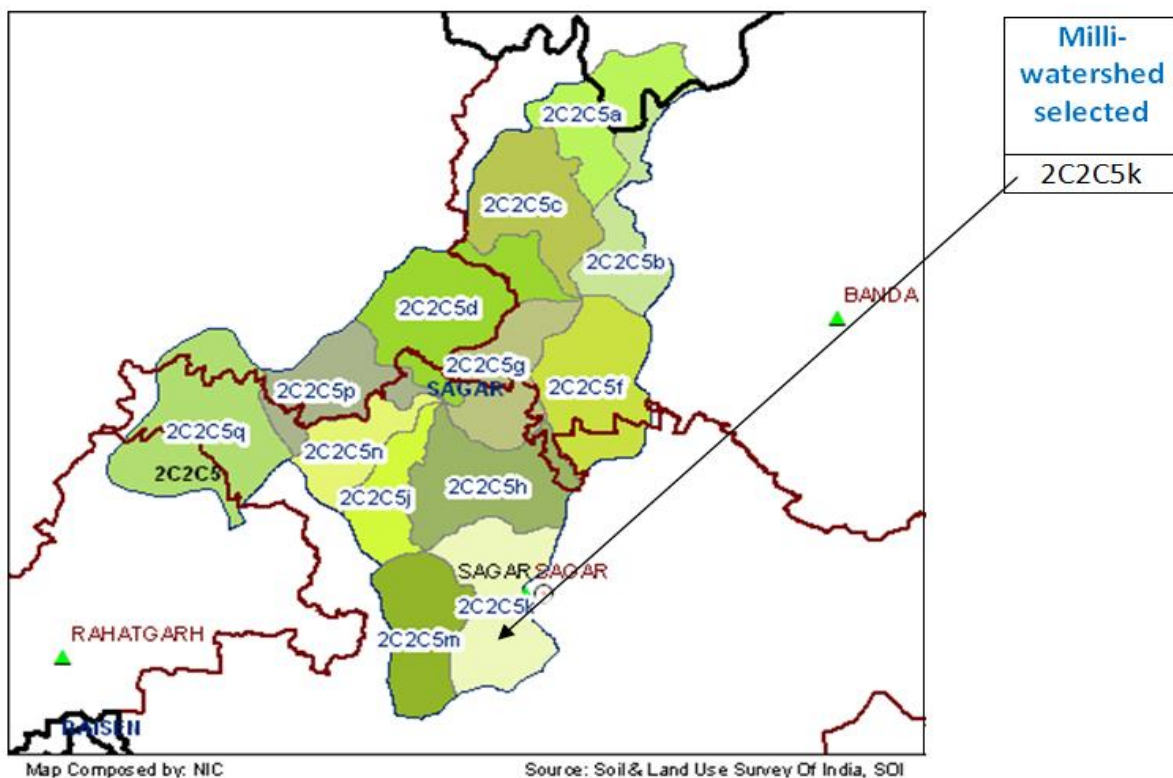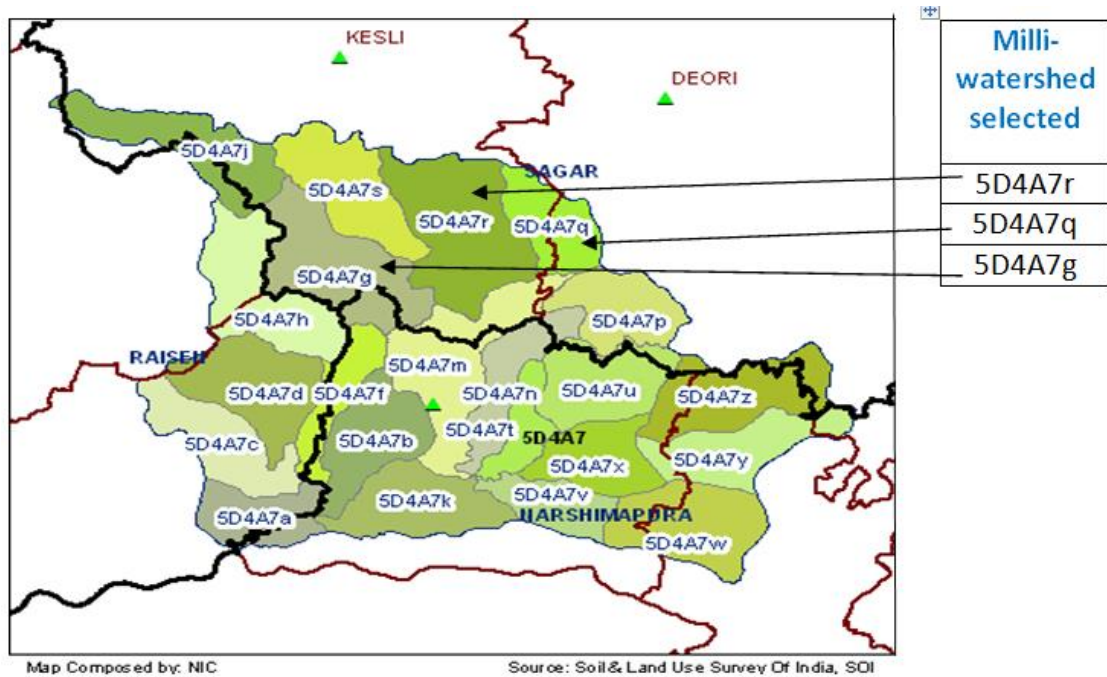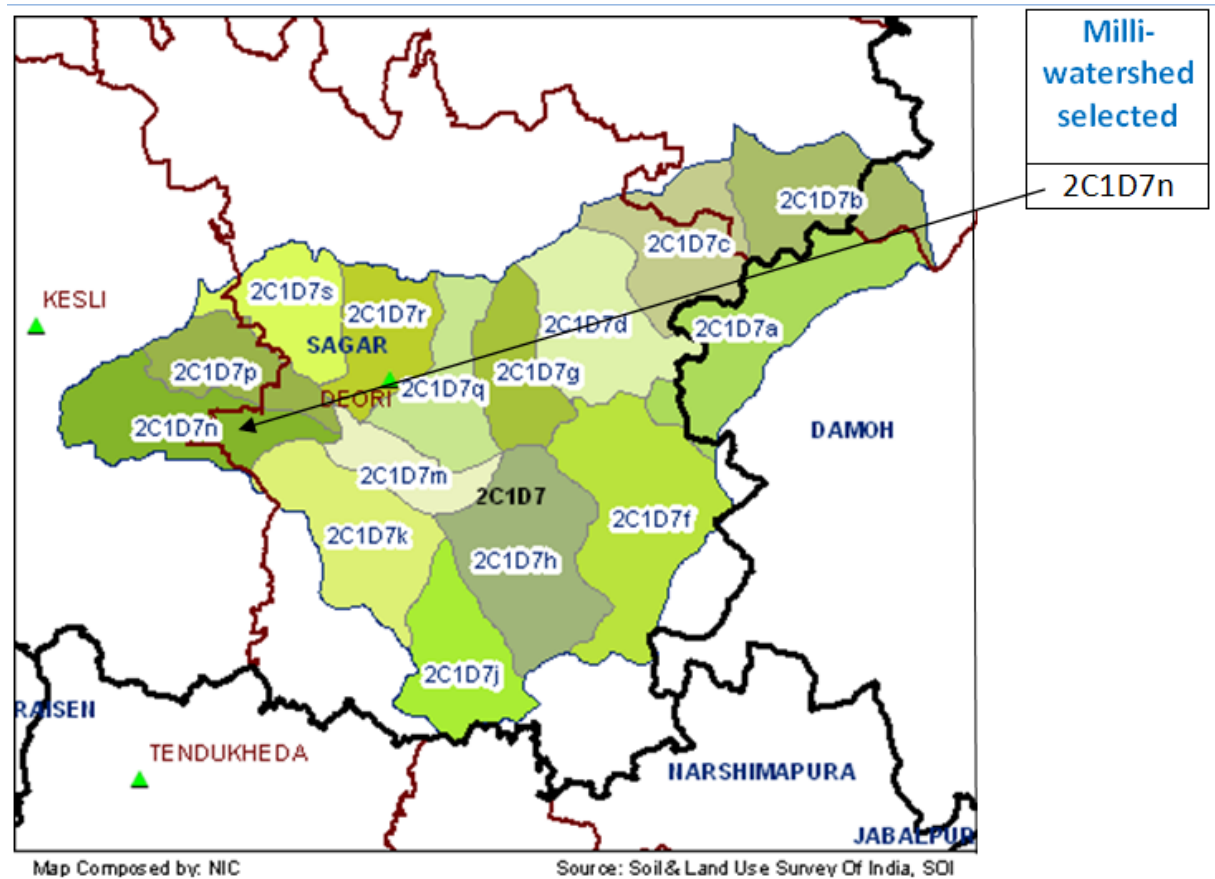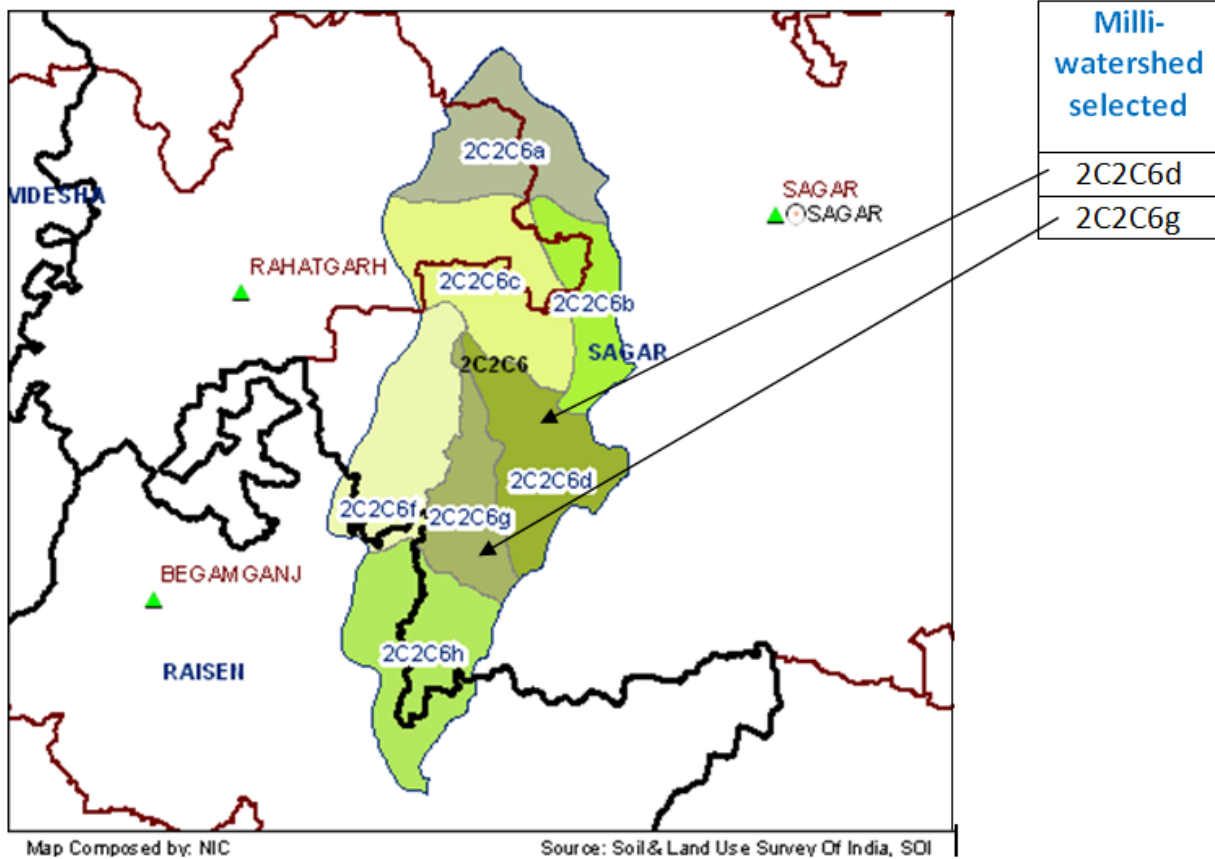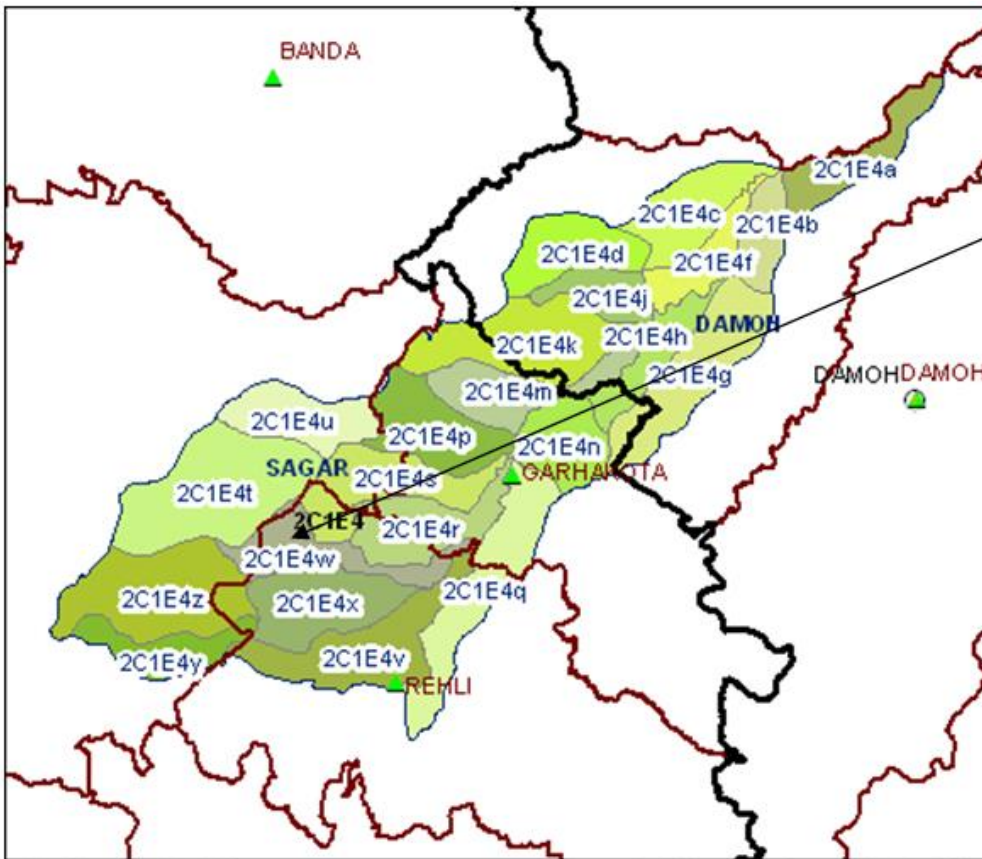
5.12.7 **L3 landscapes selected in Sagar District:-**

The 13 milli-watershed selected as L2 landscapes comprises of 79 micro-watersheds which are the working unit of the GIM. All the micro-w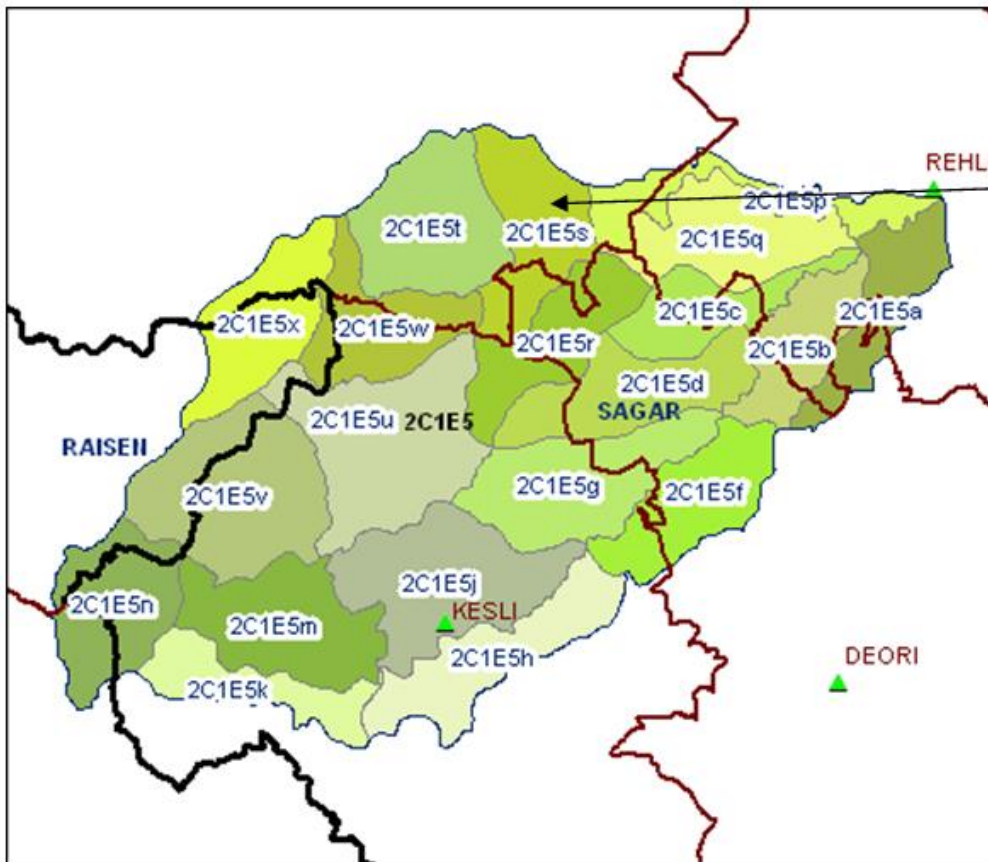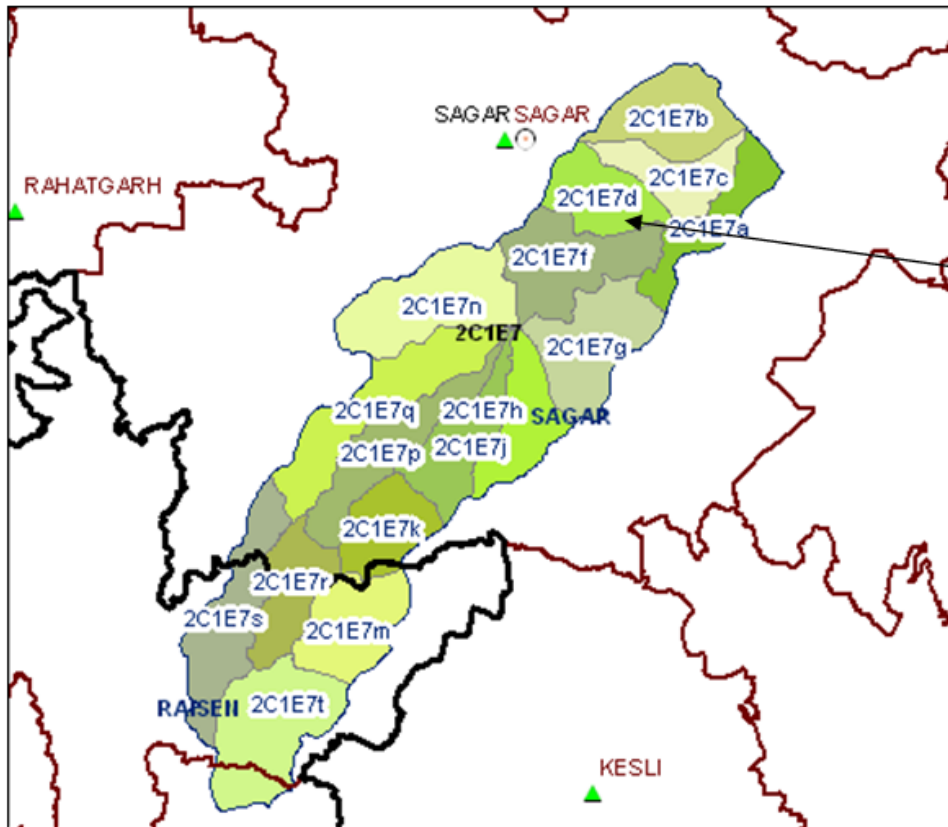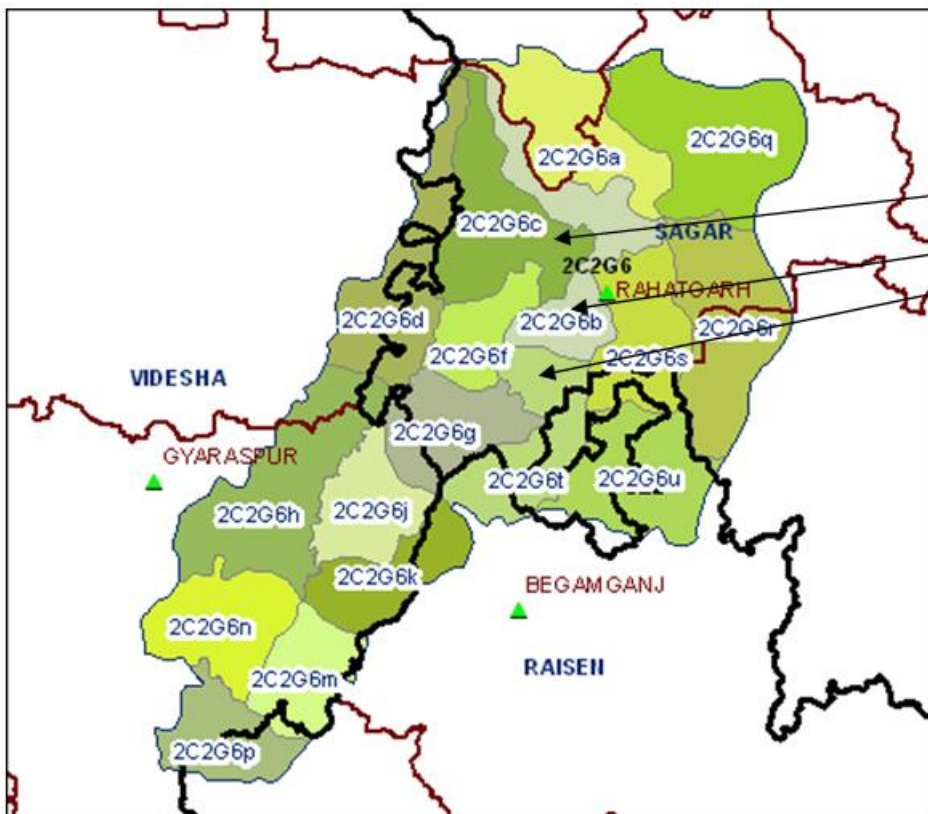atersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

5.12.7.1 **Milli-watershed no. 2C1E4w :-**

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1E4w1	0	0	0	0	650.799	650.799
2.	2C1E4w2	0	29.015	8.497	37.512	668.737	706.249
3.	2C1E4w3	0	262.297	77.522	339.819	180.427	520.246
4.	2C1E4w4	52.783	756.941	70.189	879.913	169.504	1049.417
5.	2C1E4w5	0	446.482	24.598	471.08	579.584	1050.664
Total		**52.783**	**1494.735**	**180.806**	**1728.324**	**2249.051**	**3977.375**

5.12.7.2 **Milli-watershed no. 2C2C5k:-**

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C2C5k2	0	0	0	0	647.064	647.064
2.	2C2C5k3	0	0	0	0	1094.137	1094.137
3.	2C2C5k4	0	13.059	34.156	47.215	1349.712	1396.927
4.	2C2C5k5	0	611.965	81.048	693.013	1036.53	1729.543
5.	2C2C5k6	0	10.259	4.317	14.576	1209.869	1224.445
Total		**0**	**635.283**	**119.521**	**754.804**	**5337.312**	**6092.116**

5.12.7.3 **Milli-watershed no. 2C1E5s :-**

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1E5s1	0	55.111	41.06	96.171	315.513	411.684
2.	2C1E5s2	103.438	208.793	151.401	463.632	351.815	815.447
3.	2C1E5s3	0	9.782	4.542	14.324	546.404	560.728
4.	2C1E5s4	0	0	144.855	144.855	1183.121	1327.976
5.	2C1E5s5	0	9.357	67.596	76.953	610.998	687.951
6.	2C1E5s6	0	0	1.416	1.416	871.65	873.066
Total		**103.438**	**283.043**	**410.87**	**797.351**	**3879.501**	**4676.852**

5.12.7.4 Milli-watershed no. 2C2G6b :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C2G6b1	0	0	0	0	782.381	782.381
2.	2C2G6b2	7.16	195.225		202.385	765.252	967.637
3.	2C2G6b3	268.533	366.772	55.099	690.404	375.234	1065.638
4.	2C2G6b4	66.297	258.249	141.926	466.472	342.359	808.831
5.	2C2G6b5	243.552	251.527	55.305	550.384	285.65	836.034
6.	2C2G6b6	289.472	224.464	36.168	550.104	219.452	769.556
7.	2C2G6b7	244.893	204.33	77.051	526.274	147.357	673.631
Total		**1119.907**	**1500.567**	**365.549**	**2986.023**	**2917.685**	**5903.708**

5.12.7.5 Milli-watershed no. 2C2G6c :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C2G6c1	0	0	0	0	903.189	903.189
2.	2C2G6c2	0	0	0	0	819.571	819.571
3.	2C2G6c3	0	0	0	0	702.378	702.378
4.	2C2G6c4	0	60.705	0.005	60.71	722.874	783.584
5.	2C2G6c5	206.786	268.554	80.983	556.323	401.638	957.961
6.	2C2G6c6	0	32.064	0	32.064	869.014	901.078
7.	2C2G6c7	0	144.415	0	144.415	841.456	985.871
8.	2C2G6c8	0	7.977	0	7.977	757.27	765.247
Total		**206.786**	**513.715**	**80.988**	**801.489**	**6017.39**	**6818.879**

5.12.7.6 Milli-watershed no. 2C2C6d :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C2C6d1	0	0	0.831	0.831	897.632	898.463
2.	2C2C6d2	0	0	25.294	25.294	690.23	715.524
3.	2C2C6d3	61.901	277.695	131.321	470.917	971.399	1442.316
4.	2C2C6d4	114.465	39.14	0	153.605	588.046	741.651
5.	2C2C6d5	539.902	332.885	35.448	908.235	243.868	1152.103
6.	2C2C6d6	202.528	264.905	193.498	660.931	672.14	1333.071
7.	2C2C6d7	184.007	385.573	101.523	671.103	612.705	1283.808
Total		**1102.803**	**1300.198**	**487.915**	**2890.916**	**4676.02**	**7566.936**

5.12.7.7 Milli-watershed no. 2C2G6f :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C2G6f1	0	188.058	0.467	188.525	454.729	643.254
2.	2C2G6f2	169.048	478.461	4.071	651.58	57.395	708.975
3.	2C2G6f3	0	52.422	0.112	52.534	900.251	952.785
4.	2C2G6f4	0	219.981	4.808	224.789	528.792	753.581
Total		**169.048**	**938.922**	**9.458**	**1117.428**	**1941.167**	**3058.595**

5.12.7.8 Milli-watershed no. 2C2C6g

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C2C6g1	0	22.773	0	22.773	763.674	786.447
2.	2C2C6g2	0	0	232.971	232.971	808.358	1041.329
3.	2C2C6g3	0	120.598	255.548	376.146	918.94	1295.086
4.	2C2C6g4	0	381.79	153.748	535.538	504.462	1040
5.	2C2C6g5	113.779	235.12	233.985	582.884	450.766	1033.65
Total		**113.779**	**760.281**	**876.252**	**1750.312**	**3446.2**	**5196.512**

5.12.7.9 Milli-watershed no. 2C1E7d :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1E7d1	0	0	0	0	893.068	893.068
2.	2C1E7d2	0	4.309	0	4.309	685.748	690.057
3.	2C1E7d3	0	71.378	3.968	75.346	517.391	592.737
4.	2C1E7d4	0	138.291	0	138.291	560.122	698.413
5.	2C1E7d5	0	1.323	0	1.323	744.618	745.941
Total		**0**	**215.301**	**3.968**	**219.269**	**3400.947**	**3620.216**

5.12.7.10 Milli-watershed no. 5D4A7g:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A7g1	0	87.253	42.392	129.645	516.302	645.947
2.	5D4A7g2	0	63.583	107.801	171.384	551.671	723.055
3.	5D4A7g3	757.387	77.19	219.096	1053.673	391.012	1444.685
4.	5D4A7g4	765.297	0	133.463	898.76	421.445	1320.205
5.	5D4A7g5	365.753	20.159	20.835	406.747	531.214	937.961
6.	5D4A7g6	14.475	156.837	82.595	253.907	845.225	1099.132
	Total	**1902.912**	**405.022**	**606.182**	**2914.116**	**3256.869**	**6170.985**

5.12.7.11 Milli-watershed no. 2C1D7n:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1D7n1	0	0	12.909	12.909	455.911	468.82
2.	2C1D7n2	0	0	0	0	785.281	785.281
3.	2C1D7n3	0	0	15.417	15.417	601.47	616.887
4.	2C1D7n4	0	0	0	0	842.978	842.978
5.	2C1D7n5	75.972	6.154	20.59	102.716	853.769	956.485
6.	2C1D7n6	295.745	48.494	25.407	369.646	411.269	780.915
7.	2C1D7n7	0	0	13.35	13.35	522.414	535.764
8.	2C1D7n8	185.713	69.284	0	254.997	455.102	710.099
9.	2C1D7n9	342.816	200.329	30.559	573.704	135.033	708.737
	Total	**900.246**	**324.261**	**118.232**	**1342.739**	**5063.227**	**6405.966**

5.12.7.12 Milli-watershed no. 5D4A7q:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A7q1	131.209	147.488	7.163	285.86	769.531	1055.391
2.	5D4A7q2	0	0	0	0	907.24	907.24
3.	5D4A7q3	0	0	0	0	804.38	804.38
4.	5D4A7q4	0	0	0	0	843.762	843.762
	Total	**131.209**	**147.488**	**7.163**	**285.86**	**3324.913**	**3610.773**

5.12.7.13 Milli-watershed no. 5D4A7r :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	5D4A7r1	208.708	99.53	83.067	391.305	319.115	710.42
2.	5D4A7r2	130.344	283.308	108.914	522.566	977.488	1500.054
3.	5D4A7r3	0	65.974	0	65.974	1225.974	1291.948
4.	5D4A7r4	19.335	49.678	16.608	85.621	859.704	945.325
5.	5D4A7r5	0	37.925	0	37.925	1156.249	1194.174
6.	5D4A7r6	0	0	0	0	1108.551	1108.551
7.	5D4A7r7	128.652		0	128.652	1400.736	1529.388
	Total	**487.039**	**536.415**	**208.589**	**1232.043**	**7047.817**	**8279.86**

5.12.8 Reason for selection of L2 landscapes:-

- South Sagar is one of the seven divisions where preparatory activities were carried out under Green India Mission, so to maintain continuity of treatment, this division has been selected.
- Scheduled Class dominant population, dependent on rainfed farming and labour migrate frequently in search of work to other area.
- Large portion of the population in the landscape is living below poverty line.
- The livelihood opportunities are less. There are no industries working in the area. The level of dependence on forest is high.
- Income from agriculture is meager. The percentage of irrigated crop area is very small.
- Forest land in the division is below the standards of 33 %.
- Landscape forms catchment of many rivers like Sonar, Bewas, Dhasan, Bamner and Bina rivers.

5.12.9 Possible solutions to enhance forest cover, improve ecosystem services and address the drivers of degradations:-

- Soil and Moisture Conservation Works in the catchment areas.
- Silvi-Pasture development and rehabilitation of degraded forest land.
- Plantation on forest and non forest land.
- Restoration of wet lands.
- Productivity enhancement of moderately dense forest.
- Plantation around urban and peri urban areas.

5.12.10 Proposed interventions:-

- Organizing JFMC level and Division level workshop and training program and awareness generation on GIM.
- Capacity building of forest staff and JFMC members.
- Appointing Team of Community foresters at JFMC level.
- Protection and maintenance activities-

5.12.11 Cross cutting interventions proposed:-

- Improving fuel-wood efficiency and promoting alternative energy sources.

- Distribution of pressure cooker, promotion of solar devices, Bio-gas plants depending on the need will be facilitated in the selected area.

5.12.12 Livelihood improvement activities proposed:-

- Dairy farming
- NTFP based livelihoods
- Sewing machine distribution and training
- Poultry farming
- Pisciculture

5.12.13 <u>Area proposed to be treated under different sub missions in Sagar District:-</u>

During the project period following area is proposed to be treated in South

Sagar division :-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	2125	2100	2057	0	0	6282
2.	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	1520	1490	1430	0	0	4440
3.	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	740	725	695	0	0	2160
4.	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	45	40	35	0	0	120
5.	Submission 3(a) Plantation in urban and peri urban areas	20	15	15	0	0	50
6.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	3125	2990	2912	0	0	9027
7.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	675	660	660	0	0	1995
8.	Submission 5 Restoration of wetlands	40	25	20	0	0	85
	Total	**8290**	**8045**	**7824**	**0**	**0**	**24159**

5.12.14 Budget for Sagar district:-

Submission wise budget summary for Sagar district is given below-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	2057.04	109.89	758.42	2925.35
2017-18	4164.75	89.595	1489.02	5743.37
2018-19	5151.07	70.455	1827.53	7049.06
2019-20	3513.36	50.325	1247.29	4810.98
2020-21	1729.87	30.855	616.26	2376.98
Total	**16616.09**	**351.12**	**5938.52**	**22905.73**

A total Rs229.05 cr. is proposed to be utilized for the activities selected. Details of budget for South Sagar Division is given in given Annexure xv.

5.13 Landscape Plan Panna District

Panna is situated in the northern part of Madhya Pradesh making boundary with uttar pradesh. It is located between $23^0 45'$ to $25^0 10'$ North latitude and $79^0 45'$ to $80^0 40'$ east longitude. Panna district is famous for its diamond mines.
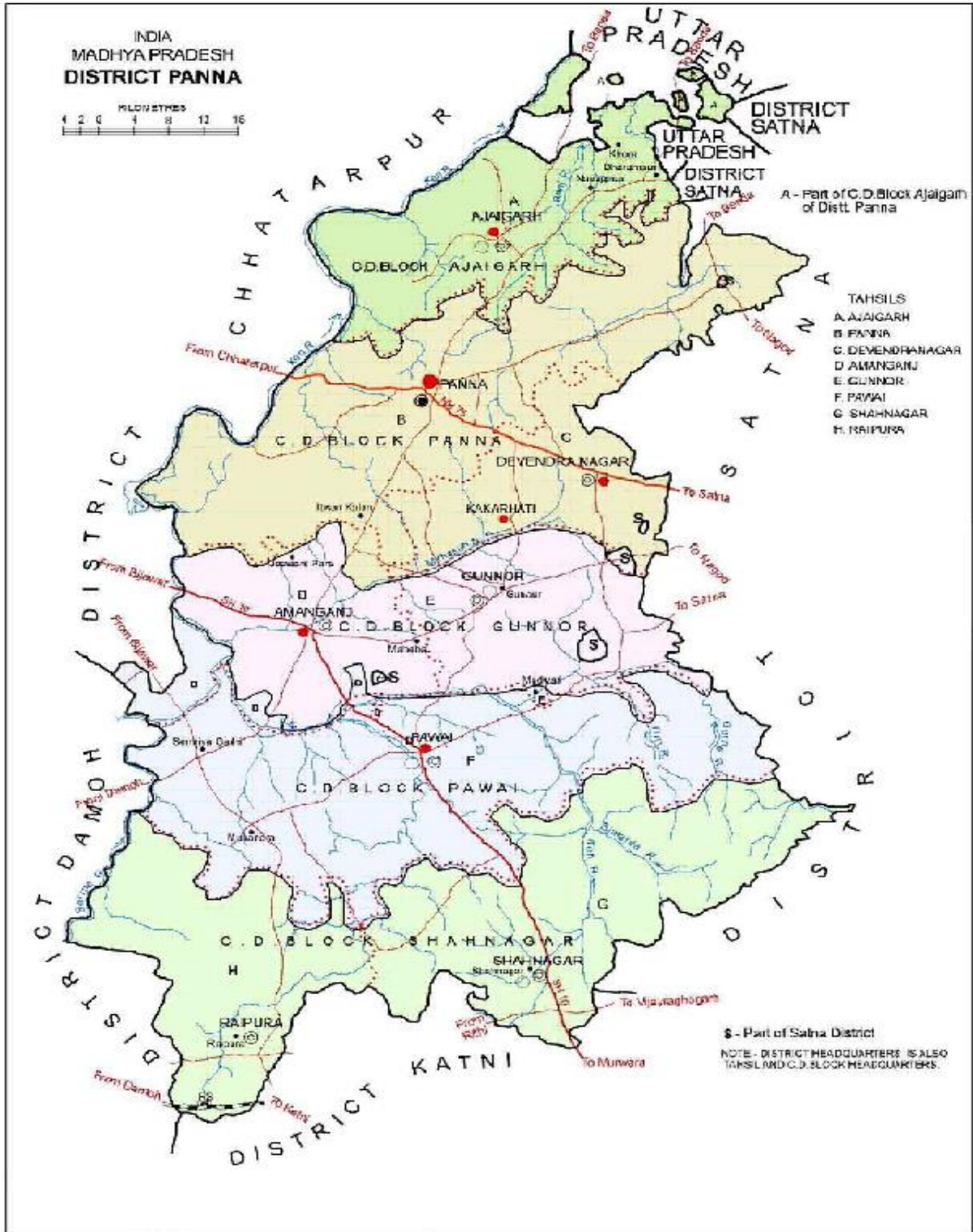
A large group of diamond deposit extends North-East on a branch of the Vindhyan range and is known as the Panna Group.The climate of the region is tropical summers somewhat scorching. Landscape area faces extremes of climate, with prolonged and hot and dry summers and mild to chilled winters. Rainy season is short with mostly low rainfall. The average maximum and minimum temperatures are 41.5 & 13.0 degree celsius respectively. The normal annual rainfall is the district is 1182 mm.

Physically Panna district forms part of vindhyachal ranges in the south followed by Bundelkhand upland in the north. The vindhyachal ranges have an average elevation of 440 meter above mean sea level in Bundelkhand upland. Ken and Ranj are the prominent rivers of the district.

Almost three-forth area of the district is covered with alluvial soil formed by the weathering of vindhyan sediments. The northern part of the district area is covered with yellowish sandy soils derived from weathering of granite rock. Thick alluvial soils are found along the river course.

There are two territorial forest divisions and one National Park in the district.For GIM purpose South Panna division has been taken up.

5.13.1 Forest:-

Forests of S.Panna division are mainly Southern Tropical Dry DeciduousTeak Forests and southern Tropical Dry Mixed Deciduous Forests. Teak is the main species of the area .Other species present are Saja, Baheda, Kusum, Bija, Palash (Butea), Bel, Aonla, Kem, Gurjan, Chirol, Sirris, Mahua etc. Lantana, Karonda Jherberi, Gokhuru are the main shrub species. The regeneration of the prominent species in the forest is not satisfactory and to improve the regeneration plantation, seed sowing, regeneration of degraded area is required. The crop density varies from 0.4 to 0.7.The area wise details of the forest in the division are as follows:-

Reserved Forest	Protected Forest	Unclassified Forest	Total (ha.)
1045.86	179855.26	0	180901.12

5.13.2 Wildlife:-

In S.Panna division the presence of big carnivores like Tiger and Panther is frequently reported. Other carnivores like Hyena, Jackal, Wild Cat, Wolf are also reported. The herbivore species found in the area are Spotted deer, Bluebull, Chinkara, Sambhar, Barking deer, Slothbear etc.Landscape area is near to famous Panna Tiger Reserve known for reintroduction and subsequent re-establishment of the once lost population of the tiger in the area. Landscapes serves as dispersal area for the wild animals of Panna national park and falls in the wild life corridor between Panna and Bandhavgarh Tiger reserve.

5.13.3 Dependence on Forest:-

In S. Panna division about 457 villages are situated within 5 km. distance from forest. Besides 87% population of the district is living in rural area which is dependent on forest for their various needs of forest produce. As per working plan estimation following forest produce is required to meet the annual demand of the population:-

Sr No.	Item	Requirement
1	Timber	16373 cmt
2	Fuelwood	1032037 qt.
3	Bamboo	616150

For most of their demand villagers depend on the forest which is exerting tremendous pressure on the forest.

5.13.4 Joint Forest Management :-

In S.Panna division 457 Villages lie in the vicinity of the forest.To ensure these villager's participation in the protection and management of the forest about 233 JFMCs have been constituted in these villages. An area of 1525.31 sq .km. has been assigned to these JFMCs for forest protection and management. Since much of the area of the division is under stocked and blank forest, 194 village forest committees have been constituted in such areas whereas near dense forest area 39 forest protection committees have been constituted.

5.13.5 Demography:-

As per2011 the census data of the district are as follows:-

Total area of the district		7135 sq. km.
Literacy rate		64.8 %
No. of villages		947
No. of households		228260
Population	Rural	891185
	Urban	125335
	Total	1016520
Population	Male	533480
	Female	483040
	Total	1016520
Scheduled caste population		207990
Scheduled tribe population		170879

The Scheduled Caste population is 20.46 % and the Scheduled Tribe population is 16.81 % of the total population of the district. About 198847 persons which is 46.03 % of district worker population work as agricultural labourers.

5.13.6 L-2 Landscapes selected in Panna District:-

Following 9 milli watersheds of S. Panna division have been selected as L2 landscapes:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1C4f	331.56	3127.137	727.524	4186.22	5357.337	9542.945
2.	2C1C4d	46.867	1555.508	815.307	2417.68	7600.809	10018.49
3.	2C1C4g	0	1348.813	3857.949	5206.76	4568.238	9775
4.	2C1C4h	0	6129.807	2072.674	8202.48	767.452	8969.933
5.	2C1C4k	110.344	6958.112	2143.364	9211.82	927.771	10139.59
6.	2C1C6s	0	1365.317	1268.268	2633.59	1308.839	3942.424
7.	2C1C6t	212.069	2081.722	636.277	2930.07	316.6	3246.668
8.	2C1C6u	769.569	842.698	273.067	1885.33	1516.919	3402.253
9.	2C1C7r	0	2155.558	1513.058	3668.62	5363.068	9031.684
Total		**1470.409**	**25564.67**	**13307.48**	**40342.6**	**27727.03**	**68068.987**

Thus the milliwatersheds selected as L2 landscapes for S.Panna division have an area of 68068.98 ha. These 9 milli-watersheds are the operational units for implementation of GIM. All the 9 milliwatersheds possess forest as well as non forest area. These 9 milliwatersheds have 64 microwatersheds out of which 47 microwatersheds have forest as well as non forest area whereas remaining 9 mili-watersheds are almost purely in forest area and 8 microwatersheds are almost purely in non forest area. The forest area in the milli –watersheds is largely open and blank forest which needs measures to increase its quality and stocking.

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI
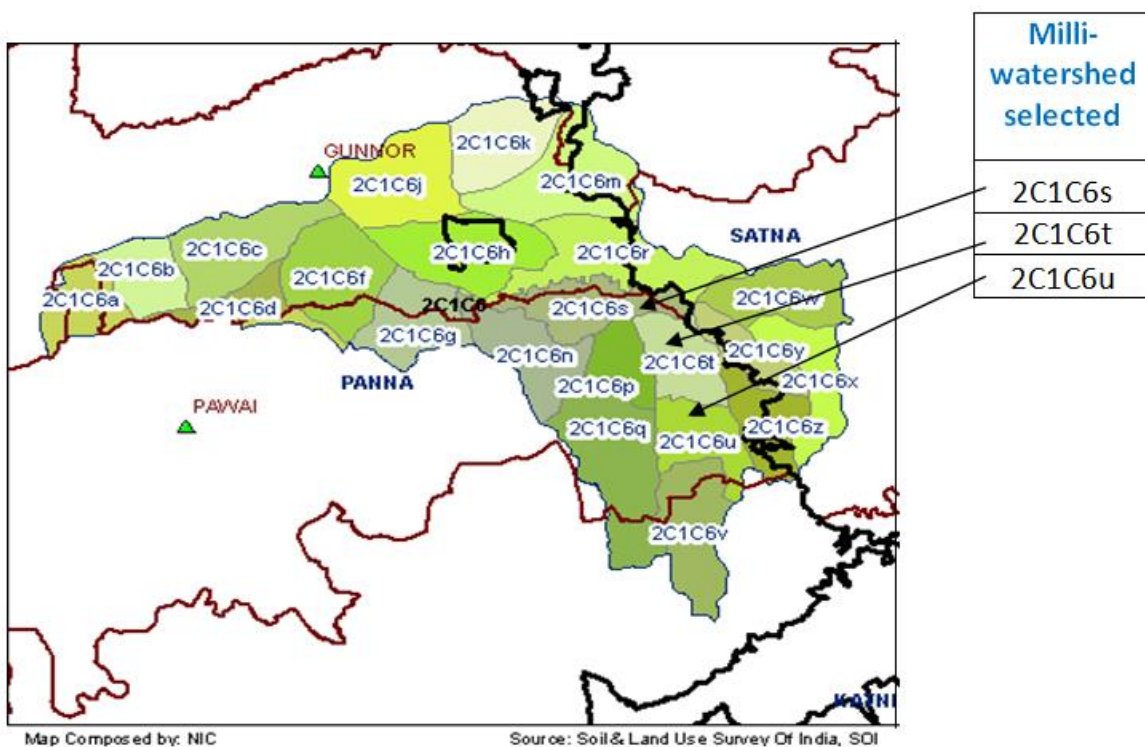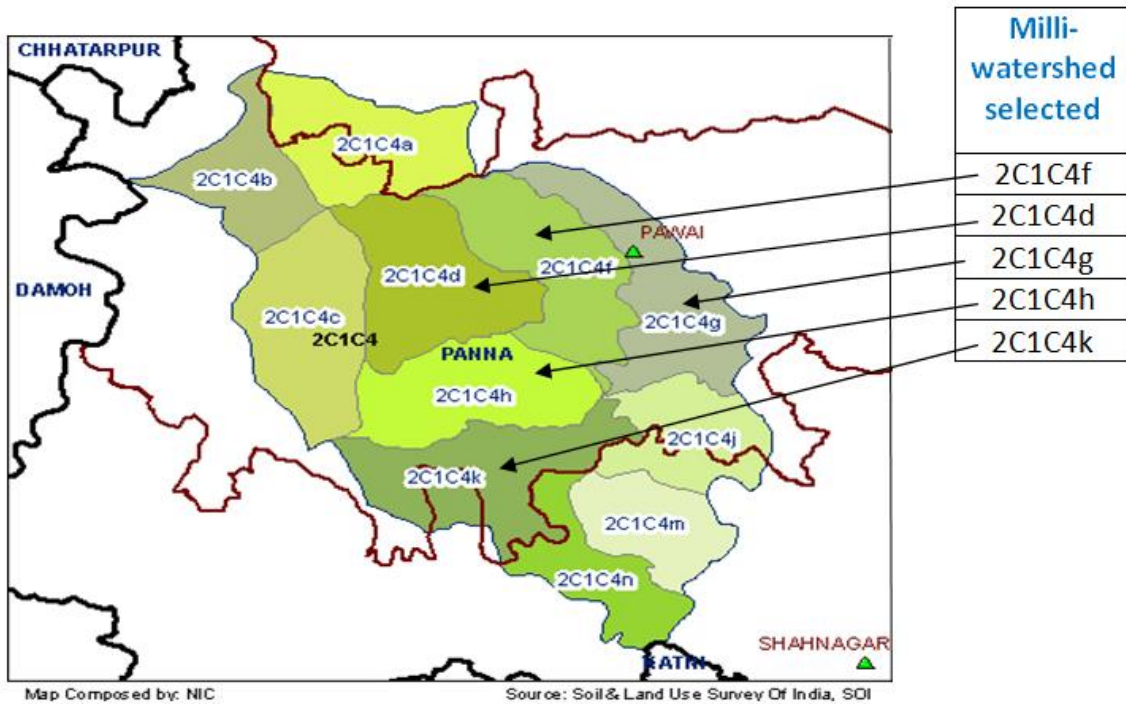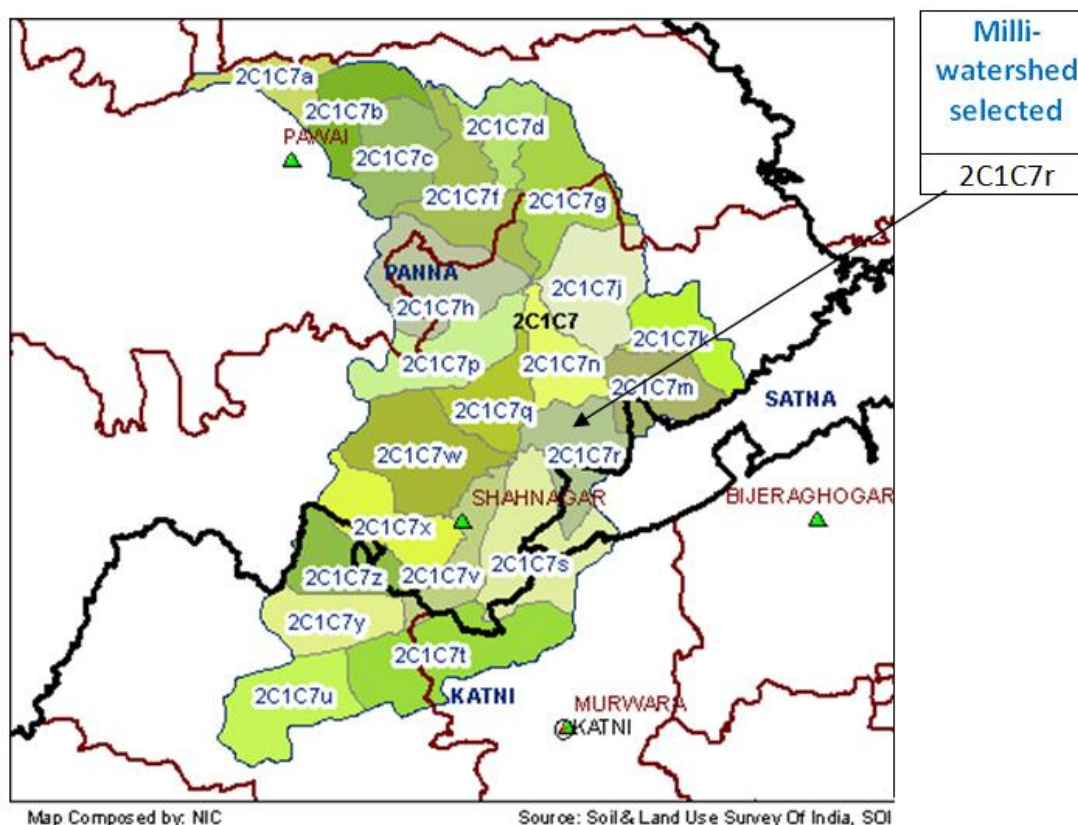
5.13.7 L3 landscapes selected in Panna District :-

The 9 milli-watershed selected as L2 landscapes have further been divided into total 64 micro-watersheds which are the working unit of the GIM. All the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

5.13.7.1 Milli-watershed no. 2C1C4f:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1C4f1	0	0	0	0	1678.963	1678.963
2.	2C1C4f2	0	19.196	0.901	20.097	1524.136	1544.233
3.	2C1C4f3	63.697	385.192	222.313	671.202	973.982	1645.184
4.	2C1C4f4	0	211.174	80.16	291.334	639.721	931.055
5.	2C1C4f5	23.771	886.273	87.294	997.338	227.489	1224.827
6.	2C1C4f6	60.158	357.23	29.22	446.608	197.421	644.029
7.	2C1C4f7	0	650.094	27.393	677.487	0	677.487
8.	2C1C4f8	183.934	469.157	67.076	720.167	0	720.167
9.	2C1C4f9	0	148.821	213.167	361.988	115.625	477
Total		**331.56**	**3127.137**	**727.524**	**4186.221**	**5357.337**	**9542.945**

5.13.7.2 Milli-watershed no. 2C1C4d:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1C4d1	0	0	0	0	1716.382	1716.382
2.	2C1C4d2	0	0	0	0	807.92	807.92
3.	2C1C4d3	0	0	0	0	552.212	552.212
4.	2C1C4d4	46.867	570.59	40.386	657.843	630.761	1288.604
5.	2C1C4d5	0	216.054	229.018	445.072	570.435	1015.507
6.	2C1C4d6	0	174.398	112.428	286.826	1322.428	1609.254
7.	2C1C4d7	0	0	0	0	986.686	986.686
8.	2C1C4d8	0	73.636	61.87	135.506	755.782	891.288
9.	2C1C4d9	0	520.83	371.605	892.435	258.203	1150.638
Total		**46.867**	**1555.508**	**815.307**	**2417.682**	**7600.809**	**10018.49**

5.13.7.3 Milli-watershed no. 2C1C4g:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1C4g1	0	0	0	0	803.663	803.663
2.	2C1C4g2	0	0	0	0	1425.88	1425.88
3.	2C1C4g3	0	37.504	35.072	72.576	737.223	809.799
4.	2C1C4g4	0	227.684	452.513	680.197	307.046	987.243
5.	2C1C4g5	0	15.05	926.229	941.279	539.615	1480.894
6.	2C1C4g6	0	201.745	739.286	941.031	14.722	955.753
7.	2C1C4g7	0	680.556	619.745	1300.301	314.549	1614.85
8.	2C1C4g8	0	45.429	355.492	400.921	171.205	572.126
9.	2C1C4g9	0	140.845	729.612	870.457	254.335	1124.792
Total		**0**	**1348.813**	**3857.949**	**5206.762**	**4568.238**	**9775**

5.13.7.4 Milli-watershed no. 2C1C4h:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1C4h3	0	129.672	297.525	427.197	105.368	532.565
2.	2C1C4h4	0	387.612	170.892	558.504	28.587	587.091
3.	2C1C4h5	0	906.628	68.788	975.416	80.021	1055.437
4.	2C1C4h6	0	1031.608	284.92	1316.528	114.094	1430.622
5.	2C1C4h7	0	543.751	691.467	1235.218	3.76	1238.978
6.	2C1C4h8	0	640.581	212.401	852.982	250.71	1103.692
7.	2C1C4h9	0	1190.567	73.894	1264.461	97.287	1361.748
Total		**0**	**6129.807**	**2072.674**	**8202.481**	**767.452**	**8969.933**

5.13.7.5 Milli-watershed no. 2C1C4k:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1C4k1	0	594.779	326.811	921.59	0	921.59
2.	2C1C4k2	0	1355.065	120.087	1475.152	0	1475.152
3.	2C1C4k3	0	954.854	404.58	1359.434	92.288	1451.722
4.	2C1C4k4	0	300.192	309.271	609.463	211.326	820.789
5.	2C1C4k5	0	600.567	197.7	798.267	66.773	865.04
6.	2C1C4k6	110.344	442.903	370.45	923.698	241.717	1165.415
7.	2C1C4k7	0	988.067	62.346	1050.413	192.314	1242.727
8.	2C1C4k8	0	964.462	67.216	1031.678	37.293	1068.971
9.	2C1C4k9	0	757.223	284.904	1042.127	86.06	1128.187
Toatal		**110.344**	**6958.112**	**2143.364**	**9211.822**	**927.771**	**10139.59**

5.13.7.6 Milli-watershed no. 2C1C6s:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1C6s1	0	0	132.876	132.876	206.414	339.29
2.	2C1C6s2	0	123.672	545.086	668.758	22.851	691.609
3.	2C1C6s3	0	80.687	182.383	263.07	411.053	674.123
4.	2C1C6s4	0	474.17	217.925	692.095	78.191	770.286
5.	2C1C6s5	0	53.569	2.348	55.917	415.429	471.346
6.	2C1C6s6	0	274.309	47.484	321.793	114.906	436.699
7.	2C1C6s7	0	358.91	140.166	499.076	59.995	559.071
Total		**0**	**1365.317**	**1268.268**	**2633.585**	**1308.839**	**3942.424**

5.13.7.7 Milli-watershed no. 2C1C6t:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1C6t1	0.824	249.443	183.987	434.254	171.867	606.121
2.	2C1C6t2	0	481.527	168.227	649.754	48.77	698.524
3.	2C1C6t3	116.271	295.577	252.013	663.861	59.131	722.992
4.	2C1C6t4	0.02	618.543	8.381	626.944	6.949	633.893
5.	2C1C6t5	94.954	436.632	23.669	555.255	29.883	585.138
Total		**212.069**	**2081.722**	**636.277**	**2930.068**	**316.6**	**3246.668**

5.13.7.8 Milli-watershed no. 2C1C6u:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1C6u1	0	171.414	108.752	280.166	534.164	814.33
2.	2C1C6u2	627.046	95.832	13.896	736.774	183.541	920.315
3.	2C1C6u3	91.355	180.193	1.724	273.272	118.507	391.779
4.	2C1C6u4	51.168	226.961	137.793	415.922	162.163	578.085
5.	2C1C6u5	0	168.298	10.902	179.2	518.544	697.744
Total		**769.569**	**842.698**	**273.067**	**1885.334**	**1516.919**	**3402.253**

5.13.7.9 Milli-watershed no. 2C1C7r:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C1C7r6	0	183.572	134.416	317.988	0	317.988
2.	2C1C7r7	0	0	0	0	0.247	0.247
3.	2C1C7r8	0	54.418	39.03	93.448	0	93.448
4.	2C1C7r9	0	2.434	187.744	190.178	277.688	467.866
Total		**0**	**2155.558**	**1513.058**	**3668.616**	**5363.068**	**9031.684**

5.13.8 Reason for selection of L2 landscapes:-

- The area is ecologically important and falls in the catchment area of perennial rivers like Ken and Patne.
- Landscape is biodiversity rich area.
- 87 % of the population lives in the rural area and most of which lives below poverty line.
- Landscape is facing tremendous biotic pressure.
- The livelihood opportunities are less. There are no industries working in the area. The level of dependence on forest is high.
- Income from agriculture is meager. The percentage of irrigated crop area is very small.
- Area falls in the wild life corridor between Panna and Bandhavgarh Tiger reserve.
- Most of the forest is either open forest or degraded forest which needs special treatment.

5.13.9 Possible solutions to enhance forest cover, improve ecosystem services and address the drivers of degradations:-

- Effective management to combat biotic pressure - It will be achieved through efficient fire management, regularizing the grazing, control on illicit felling, enhancing fodder, fuel wood, bamboo, small and NTFP production through plantation of selective species.

- Enhancement of forest cover in forest and non forest area - It will be achieved through plantation of suitable species in forest and non forest area.

- Restoration of grasslands.

- Soil and water conservation - It will be achieved through watershed treatment methodology i.e. the treatment from ridge to valley of the watershed.

- Reclamation of abandoned mining areas.

- Reduction in the degree of dependence on forest- Reduction in the degree of dependence on forest will be achieved through promotion of alternate energy resources.

5.13.10 Proposed interventions:-

- Strengthening of Forest department and JFMCs.

- Capacity building of forest personnel as well as JFMC members by organizing JFMC level and Division level workshop and training programmes.

- Appointing Team of Community foresters at JFMC level

- Protection and maintenance activities.

- Livelihood activities.

5.13.11 Cross cutting interventions proposed:-

- Improving fuel-wood efficiency and promoting alternative energy sources

5.13.12 Livelihood improvement activities proposed:-

- Livelihood opportunities -Various livelihood activities such as Dairy Farming, NTFP based livelihoods, Kirana store, sewing machine, Poultry farming, Ecotourism, Dona pattal manufacturing and Fisheries will be taken in all villages.

5.13.13 Area proposed to be treated under different sub missions in Panna District:-

Following activities are proposed to be taken up during the project period :-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	590	565	525	0	0	1680
2.	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	3031	2936	2826	0	0	8793
3.	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	2137	2090	1884	0	0	6111
4.	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	1145	1105	900	0	0	3150
5.	Submission 1 (c) Restoration of grasslands	1115	1075	996	0	0	3186
6.	Submission 2 (f) Restoration of abandoned mining area	55	45	40	0	0	140
7.	Submission 3(a) Plantation in urban and peri urban areas	12	6	4	0	0	22
8.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	1320	1250	1150	0	0	3720
9.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	335	310	300	0	0	945
	Total	**9740**	**9382**	**8625**	**0**	**0**	**27747**

A total 27747 ha. area is proposed to be treated during the project period.

5.13.14 Budget for Panna district:-

Submission wise budget summary for Panna district is given below-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	2896.41	115.5	1054.17	4066.07
2017-18	5840.78	96.525	2078.06	8015.36
2018-19	6971.22	80.85	2468.23	9520.30
2019-20	4692.79	66.165	1665.64	6424.60
2020-21	2339.00	50.325	836.26	3225.59
Total	**22740.20**	**409.37**	**8102.35**	**31251.92**

Details of budget for South Panna Division is given in given Annexure xvi.

5.14 Landscape Plan Sheopur Kalan District

Sheopur Kalan is located at north- western part of Madhya Pradesh making boundary with Rajasthan state. The district is situated between $25^0 16'$ to 26^0 9' North latitude and 76^0 36' to 77^0 11' East longitude.

Most of the terrain is generally plain with some undulating hills. The elevation varies from 213 meter above mean sea level to 498 meter above mean sea level. The highest point being Jhadewala hill.The major river of the district is Chambal which has Seep, Padam, Kuno and Asan as its tributary while the Kunwari river of the district directly join Yamuna river. The Chambal & its tributaries form the major drainage pattern. The Chambal river flows along the northern periphery of the district whereas the Parbati, the biggest tributary of Chambal forms the western boundary of the district. The length of the Chambal river is about 250 km. All other rivers which are tributaries of the Chambal are generally flowing from south to north. All these rivers have good amount of water during rainy season but during summer most of them are dry. Most of the area is part of Vindhyan group which possesses sandstone which gives rise to murram soil. This soil has little carbon, nitrogen and humus contents but is rich in potash. The fertility and water holding capacity of this soil is very low. The area lying in valleys and at the lower end of the slopes possesses good fertile soil. Along the banks of Kuno, alluvial soil is distinctly present.

The normal annual rainfall of the district is 944 mm. The district receives maximum rainfall during south-west monsoon period i.e. June to Sept. About 92.1% of the rainfall is received during monsoon period. Only 7.9% of the annual rainfall takes place between October to May period. Thus surplus water for ground water recharge is available only during the monsoon period. The normal maximum temperature recorded during the month of May is 42^0 c and minimum during January is 7.4^0 c. The normal annual means of maximum and minimum temperature of Sheopur- Kalan district is 33^0 c & 18^0 c respectively. About 50% of the geographical area is available for cultivation. About 70 % of the cultivable area in the district is irrigated. Canal is the major source of irrigation which accounts for 42.94% of the total irrigated area. The well known Kaketa reservoir is located in this district. Wheat is the most important food grain grown in the district whereas mustard is the most important oil seed grown in the district. Major kharif crop is Bajra.

There are two administrative units of the forest department in the district i.e. Sheopur Territirial division and Kuno Palpur wild life division which looks after the famous Kuno wild life Sanctuary .For GIM purpose Sheopur division has been selected.

5.14.1 Forest:-

Most of the forests of Sheopur forest division are dry deciduous forest. As per Champion and Seth classification they are basically in following three categories:-

1. Southern Tropical Dry Deciduous Forest
2. Northern Tropical Dry Deciduous Forest
3. Northern Tropical Thorn Forest

Forest type wise mainly mixed forests are found in Sheopur division, which makes about 52% of the total forest type of the division. Apart from this patches of Dhawda, Khair, Kardhai and Salai forests are also present. The prominent species of this division are Dhawda Palas, Kardhai, Salai, Mahua, Kullu in the top canopy. Middle canopy is occupied by Ber, Ghont, Khair, Remjha etc. Division has got very good grasslands and Panwar, Guner, Kel, Machoi, Lampa and Lapusari are the main grasses. Teak species is present in very small area of Southern Karahal. Commercially khair is the most important species of the division and khair tree used to be supplied to industries for kattha preparation. The distribution of forest area in the division is as follows :-

Reserve forest	Protected Forest	Unclassified Forest	Total (ha.)
228331.36	43612.38	128.23	272071.97

5.14.2 Wildlife :-

The rich biodiversity and geological formations of Sheopur division provides suitable habitat for various wild animals. The division is adjoining to Kuno Palpur Sanctuary which is being developed as second home to Gir Lions. The main mammal species found in the area are Leopard, Sloth bear, Jackal, Hyena, Spotted Deer, Chinkara, Barking Deer, Sambhar, Neel Gai , Black Buck etc. Grey Pelican, Little Cormorant, Darter, Grey Heron, Nakta, Common Teal, Ring Dove , Golden Backed Woodpecker are the prominent bird species found in the area.

5.14.3 Dependence on Forest :-

The people of Sheopur have long and deep association with forest and forest produce. The art of wood carving has flourished in the district and beautifully embellished wooden ceiling, doors and intels with finely carved designs are silent testimony of its glory. The wood carvers of Sheopur with great sensitivity and skill transform different varieties of wood into attractive items. The craft persons of Sheopur make pipes, masks, toys, doors, stands, windows, wooden memorials, flower vases, bed posts and cradle posts etc.

There are 516 village in the district out of which 167 villages are situated within 5 km of the forest boundary. About 50% of agricultural cultivators are marginal farmers who are dependent on MFP collections for their additional income.Tendu Patta, Gum (Salai, Dhawda, Kullu, Khair) Honey, Chironji, Medicinal plants are the various MFPs obtained from the forest.

As per the working plan estimate the annual requirement of the district for timber is 23400 cmt., fuel wood is 20.22 lac qt., Bamboo is 20000 no., and thorny bushes is 48000 Qt. Villages depend heavily on forest to meet their requirments. Sheopur has cattle population of 439249 animals which make 675395 cattle unit whereas the carrying capacity of the forest is only 314053 cattle units. Thus the grazing pressure is tremendous on the forest. Apart from this forest of Sheopur being on the route of migratory cattles from Rajasthan and U.P. has to bear the extra pressure of these animals in transit.

5.14.4 Joint Forest Management:-

There are 516 village in the district out of which 167 village are situated within 5 km of the forest boundary. To ensure active participation of these villagers in forest protection and management 141 Village Forest Committees and 16 Forest Protection Committees have been constituted and an area of 846.22 sq. km. has been assigned to these committees.

5.14.5 Demography:-

As per 2011 census data the population statistics of Sheopur Kalan district is as follows :-

Total area of the district		6606 Sq Km
Literacy rate		57.4 %
No. of households		147702
Population	Rural	580509
	Urban	107352
	Total	687861
Population	Male	361784
	Female	326077
	Total	687861
Scheduled caste population		108391
Scheduled tribe population		161448

Scheduled Caste form 15.76% of the population where as Scheduled Tribe are about 23.47% of the population. Sheopur is a tribal district of Madhya Pradesh and a primitive tribe namely, Saharia are the main tribe of the district.

The main occupation in the district is agriculture and 41.54% of the worker population i.e. 115261 people work as a agricultural laborers.

5.14.6 L-2 Landscapes selected in Sheopur District:-

Following 8 milli watersheds of the division have been selected as L2 landscapes:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1	2D1B3g	169.838	896.492	71.977	1138.31	726.452	1864.76
2	2D1B3u	330.991	1748.09	91.256	2170.34	1301.22	3471.56
3	2D1B8b	116.17	6168.49	1078.48	7363.13	1263.57	8626.71
4	2D1B8c	429.519	7908.83	1259.43	9597.78	1340.13	10937.9
5	2D1B8d	27.018	2385.44	465.962	2878.42	2879.18	5757.6
6	2D1B8j	69.079	4491.6	484.464	5045.14	0	5045.14
7	2D1B8k	973.525	5929.52	474.264	7377.31	1232.64	8609.95
8	2D1B8t	0	3778.48	902.77	4681.25	1348.25	6029.5
	Total	**2116.14**	**33306.9**	**4828.6**	**40251.7**	**10091.4**	**50343.1**

Thus the milliwatersheds selected as L2 landscapes in Sheopur division have an area of 50343.13 ha. These 8 milli-watersheds are the operational units for implementation of GIM. All the 8 milliwatersheds possess forest as well as non forest area. One milliwatershed is completely in forest area. These 8 milliwatersheds have 48 microwatersheds out of which 24 microwatersheds have forest as well as non forest area whereas remaining 20 microwatersheds are almost completely in forest area and 4 microwatersheds are completely in non forest area .The forest area in the milli –watersheds is largely open forest which needs measures to regenerate it into a dense forest.
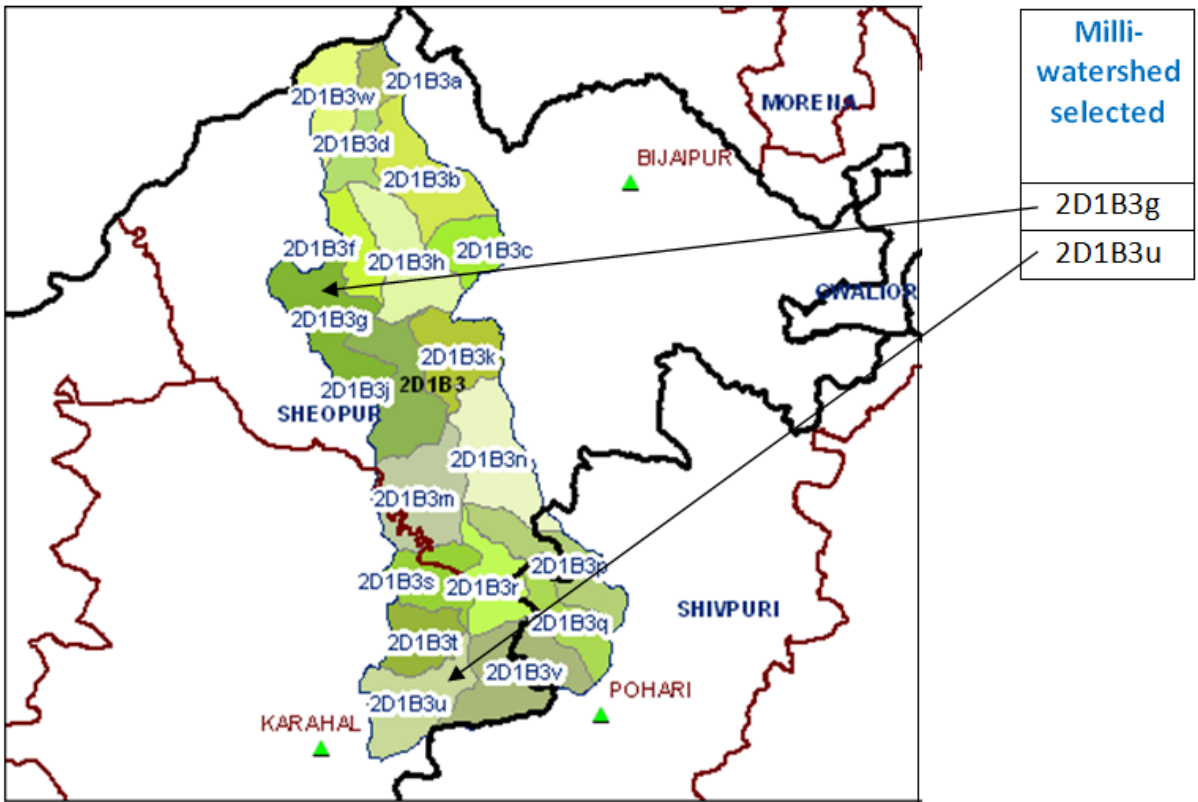
Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI
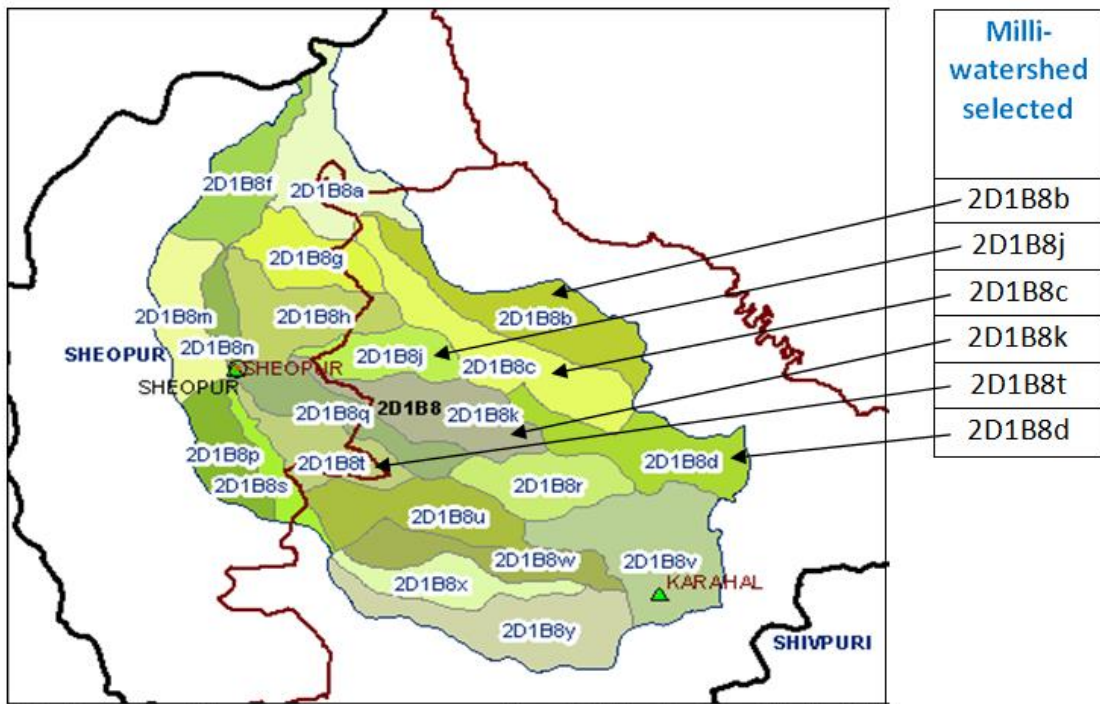
Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

5.14.7 L3 landscapes selected in Sheopur District:-

The 8 milli-watershed selected as L2 landscapes have further been divided into total 48 micro-watersheds which are the working unit of the GIM. All the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

5.14.7.1 Milli-watershed no. 2D1B3g:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1	2D1B3g1	73.278	468.54	1.033	542.851	2.688	545.539
2.	2D1B3g2	96.56	427.952	70.944	595.456	723.764	1319.22
Total		**169.838**	**896.492**	**71.977**	**1138.31**	**726.452**	**1864.76**

5.14.7.2 Milli-watershed no. 2D1B3u :-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2D1B3u3	0	19.96	21.757	41.717	113.576	155.293
2.	2D1B3u5	14.675	530.191	18.178	563.044	358.424	921.468
3.	2D1B3u6	0	287.461	0	287.461	474.766	762.227
4.	2D1B3u7	316.316	910.476	51.321	1278.113	354.458	1632.571
Total		**330.991**	**1748.088**	**91.256**	**2170.335**	**1301.224**	**3471.559**

5.14.7.3 Milli-watershed no. 2D1B8b:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2D1B8b1	0	566.166	156.785	722.951	0	722.951
2.	2D1B8b2	0	541.844	104.42	646.264	0	646.264
3.	2D1B8b3	0	882.069	221.757	1103.826	0	1103.826
4.	2D1B8b4	0	969.195	37.466	1006.661	0	1006.661
5.	2D1B8b5	0	1245.414	29.519	1274.933	0.95	1275.883
6.	2D1B8b6	0	473.782	0	473.782	266.305	740.087
7.	2D1B8b7	116.17	748.129	392.467	1256.766	0	1256.766
8.	2D1B8b8	0	741.889	136.062	877.951	27.953	905.904
9.	2D1B8b9	0	0	0	0	968.364	968.364
Total		**116.17**	**6168.488**	**1078.476**	**7363.134**	**1263.572**	**8626.706**

5.14.7.4 **Milli-watershed no. 2D1B8c:-**

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2D1B8c1		954.025	833.419	1787.444	0	1787.444
2.	2D1B8c2	45.207	857.52	43.654	946.381	0	946.381
3.	2D1B8c3	130.098	1683.311	34.51	1847.919	0	1847.919
4.	2D1B8c4	43.472	901.319	42.191	986.982	0	986.982
5.	2D1B8c5	31.969	739.141	138.115	909.225	0	909.225
6.	2D1B8c6	0	1040.271	71.44	1111.711	646.407	1758.118
7.	2D1B8c7	0	443.677	42.699	486.376	125.983	612.359
8.	2D1B8c8	102.427	384.945	13.373	500.745	373.837	874.582
9.	2D1B8c9	76.346	904.623	40.031	1021	193.906	1214.906
Total		**429.519**	**7908.832**	**1259.432**	**9597.783**	**1340.133**	**10937.92**

5.14.7.5 **Milli-watershed no. 2D1B8d:-**

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2D1B8d1	23.361	704.08	193.809	921.544	0	921.256
2.	2D1B8d2	3.657	733.602	118.118	855.377	230.872	1086.249
3.	2D1B8d3	0	527.973	58.493	586.466	148.98	735.446
4.	2D1B8d4	0	306.795	95.134	401.929	565.203	967.132
5.	2D1B8d5	0	19.724	0.408	20.132	852.767	872.899
6.	2D1B8d6	0	92.974	0	92.974	589.299	682.273
7.	2D1B8d7	0	0	0	0	144.373	144.373
8.	2D1B8d8	0	0	0	0	286.185	286.185
9.	2D1B8d9	0	0	0	0	61.785	61.785
Total		**27.018**	**2385.442**	**465.962**	**2878.422**	**2879.176**	**5757.598**

5.14.7.6 **Milli-watershed no. 2D1B8j:-**

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2D1B8j1	64.591	1402.626	48.499	1515.716	0	1515.716
2.	2D1B8j2	0	801.103	237.233	1038.336	0	1038.336
3.	2D1B8j3	4.488	1086.179	100.713	1191.38	0	1191.38
4.	2D1B8j4	0	1201.688	98.019	1299.707	0	1299.707
Total		**69.079**	**4491.596**	**484.464**	**5045.139**	**0**	**5045.139**

5.14.7.7 Milli-watershed no. 2D1B8k:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2D1B8k1	0	752.409	86.09	838.499	2.535	841.034
2.	2D1B8k2	0	955.179	43.171	998.35	2.098	1000.448
3.	2D1B8k3	244.266	1222.426	5.289	1471.981	6.379	1478.36
4.	2D1B8k4	0	559.023	232.286	791.309	0.088	791.397
5.	2D1B8k5	9.887	883.182	92.209	985.278	3.451	988.729
6.	2D1B8k6	82.018	1557.305	0	1639.323	106.39	1745.709
7.	2D1B8k7	637.354	0	15.219	652.573	1111.697	1764.27
Total		**973.525**	**5929.524**	**474.264**	**7377.313**	**1232.638**	**8609.947**

5.14.7.8 Milli-watershed no. 2D1B8t:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2D1B8t1	0	270.486		270.486	571.691	842.177
2.	2D1B8t2	0	672.379	62.103	734.482	449.278	1183.76
3.	2D1B8t3	0	1485.293	245.446	1730.739	30.223	1760.962
4.	2D1B8t4	0	1350.323	595.221	1945.544	297.056	2242.6
Total		**0**	**3778.481**	**902.77**	**4681.251**	**1348.248**	**6029.499**

5.14.8 Reason for selection of L2 landscapes:-

- Area is under severe pressure of heavy erosion. The issue of erosion becomes much more problematic due to very heavy pressure of grazing. About 6 lac cattles go for grazing into forest during rainy season.

- Area is in a dry zone. Forest land is under severe pressure due to excess grazing and fuel wood removal. Due to severe biotic pressures forest area is prone to degradation and habitat fragmentation.

- Area is in the proximity of Ranthambhor tiger reserve and Kuno wild life sanctuary.The area is frequented by tigers, leopards and other wild animals.

- Area is very rich in biodiversity, hence its conservation is crucial for conservation of biodiversity in this landscape. The area contains endangered plant as well as animal species.

- Area is home of many central Indian aboriginals including Sahariya primitive tribe.

- The area is of ecological importance area and falls in the catchment of river Kuno and Chambal, which is lifeline of districts Sheopur, Shivpuri, Morena of Madhya Pradesh therefore conservation of catchment is necessary to maintain the ground water level.

- Large proportion of the population in the area is living below poverty line. The livelihood opportunities are less. Income from Agriculture is meager .There are negligible industries in the area. Hence people are largely dependent on subsistence farming and forests for their survival. Farming being largely rain fed peoples are heavily dependent on the forest resources. Hence there is huge biotic pressure upon the forest and ecology of the area. The level of dependence on forest is high.

5.14.9 Possible solutions to enhance forest cover, improve ecosystem services and address the drivers of degradations:-

- Effective management to combat biotic pressure - It will be achieved through efficient fire management, regularizing the grazing, control on illicit felling, enhancing fodder, fuel wood, bamboo, small and NTFP production through plantation of selective species.

- Enhancement of forest cover in forest and non forest area - It will be achieved through plantation of suitable species in forest and non forest area. Open forest to be given priority in treatment. Restoration of degraded open forest area will be undertaken with the participation of local community. The model of reforestation will be such as to fulfill the local needs of fuel wood, fodder and small timber. Promotion of tree cover outside forest under various models of agro forestry will be promoted to reduce forest dependence.

-Restoration of grassland to be taken on large scale. Grassland development and fodder plantations will be under taken in degraded open forest areas.

- Soil and water conservation - It will be achieved through watershed treatment methodology i.e. the treatment from ridge to valley watershed.

- Reduction in the degree of dependence on forest- Reduction in the degree of dependence on forest will be achieved through promotion of alternate energy resources such as biogas, solar devices, LPG and other fuel efficient devices.

- Livelihood opportunities -Various livelihood activities such as, Dairy Farming, NTFP based livelihoods, sewing machine, Poultry farming, Dona pattal manufacturing shall be assisted. Value addition of the minor forest produce to be fecilitated.

5.14.10 Proposed interventions:-

- Meeting energy needs through clean and alternative sources like Bio gas, solar energy, LPG, will be encouraged among the poor households to reduce the fuel wood requirements.

- Strengthening of Forest department and JFMCs by organizing JFMC level and Division level workshop and training program. Training will be provided to field staff and members on PRA, micro-planning, watch and ward activities and on establishing convergence.

- Protection and maintenance activities- The maintenance and protection of existing forest cover is of as much importance as encouraging the new plantation and treatment of degraded area. Cooperation of local communities to be ensured for forest protection.

5.14.11 Cross cutting interventions proposed:-

- Improving fuel-wood efficiency and promoting alternative energy sources.

- Convergence with other development and social security activities going on the area.

5.14.12 <u>Livelihood improvement activities proposed</u>:-

Dairy farming, NTFP based livelihoods, Sewing machine training, Poultry farming.

5.14.13 <u>Area proposed to be treated under different sub missions in Sheopur District</u>:-
Following area to be treated during the project period :-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1	Submission 1 (a) Moderately dense forest cover, but showing degradation	659	659	659	0	0	1977
2	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	3745	3745	3745	0	0	11235
3	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	1780	1780	1780	0	0	5340
4	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	995	995	995	0	0	2985
5	Submission 1 (c) Restoration of grasslands	3690	3690	3690	0	0	11070
6	Submission 3(a) Plantation in urban and peri urban areas	8	7	5	0	0	20
7	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	478	478	478	0	0	1434
8	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	116	116	116	0	0	348
	Total	11471	11470	11468	0	0	34409

Thus a total 34409 ha. area is proposed to be treated during the project period.

5.14.14 Budget for Sheopur district:-

Submission wise budget summary for Sheopur district is given below-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	3385.38	93.555	1217.63	4696.56
2017-18	6981.18	78.309	2470.82	9530.31
2018-19	8830.93	67.947	3114.61	12013.48
2019-20	6047.35	57.585	2136.73	8241.66
2020-21	2960.58	46.563	1052.50	4059.64
Total	**28205.41**	**343.96**	**9992.28**	**38541.65**

Total Rs 385.41 is proposed for activities under various sub missions .

Details of budget for Sheopur Division is given in given Annexure xvii.

5.15 Landscape Plan Shivpuri District

Shivpuri district is situated in the northern part of the Madhya Pradesh and covers an area of about 10066 sq. km. It lies between North Latitude $24^0 40'$ to $26^0 05'$ and East longitude $77^0 01'$ to $78^0 29'$.
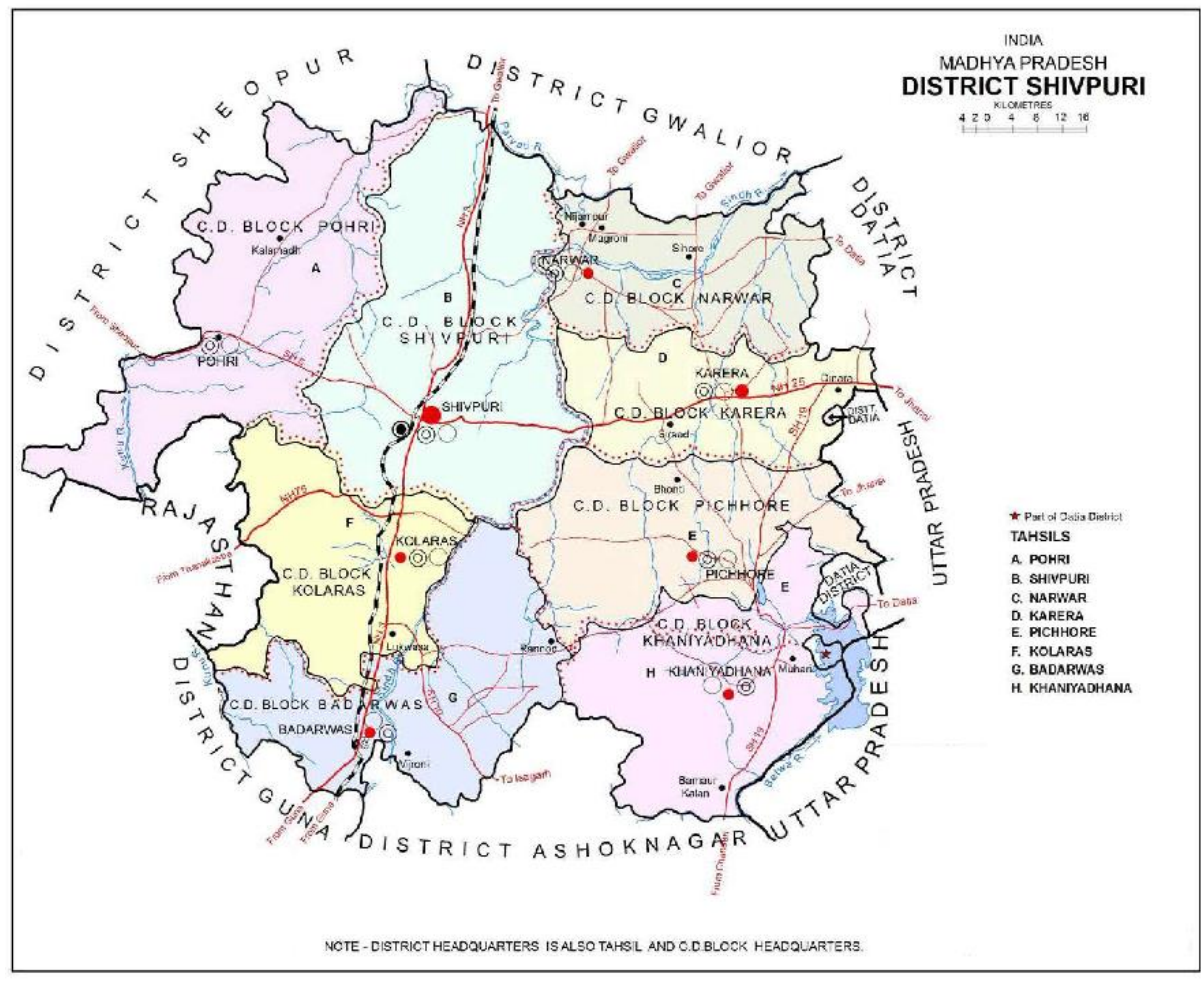
Shivpuri district is situated on the northern part of Vindhyan plateau whose western part is extension of Malwa plateau which lack trappean cover, but over a small portion in south-west part of the district, it has basalt. The eastern plateau of the district is a lower plateau. The whole district is divided into 5 geographical formations:-

- Western Plateau
- Lower Bundelkhand Plateau
- Betwa Valley
- Sindh Valley
- Kuno Valley

Betwa & Sind Rivers flowing northerly forms the major drainage in the eastern and central parts and river Kuno is another major river in the western parts. The district falls in the Yamuna basin. The district can be divided into four sub basins.

– Parwati Sub basin –

The Sind – Parwati sub basin of the Chambal River is in Yamuna basin. River Parwati flows west to east and forms the northern boundary of the district. The general topography is hilly and sloping toward North & West.

- Sind – Kuno Sub Basin-

The River Kuno flows from south to north forms western boundary of the district. The general slope is south – east to north – west i.e. towards Sind River.

- Sind – Betwa Sub Basin-

River Betwa flows from SW to NE and forms eastern boundary of the district. The general slope is towards NE.

- Sind – Mahuar Sub Basin –

The River Mahuar crosses the hilly area at an elevation of 296.91 m above MSL after flowing from south to north in Pichor block enters into Karera block at village Bardi. The general slope of the sub basin is towards North.

Apart from above rivers there are more than 250 old water tanks (talab) in Shivpuri district which are major source of irrigation in the district. Recently a big dam, Madikheda Dam, constructed over Sindh river has also become operational.

The district is generally covered with sandy clay soil derived from the weathering of Bundelkhand granites and the Vindhyan formations. The southern part of the district is covered by the black cotton soils derived by the weathering of the Deccan trap formation. Depth of the soil varies from paper-thin to 15m. The color of the sandy soil is light yellow to yellowish brown. The central and southern parts of the district are covered by lateritic soil of dark brown to yellowish brown in color. Alluvium is found all along the major and minor rivers, it consists of gravel, silt, sand and pebble. General climate is subtropical with extreme of hot season. The main geological formations are Vindhyan. Average rain fall in the area is 861 mm. Most of the area of division is plain with the altitude in general about 350 meter above mean sea level. Average maximum temperature is 33.15^0 C and average minimum temperature is 16.32^0 C.

5.15.1 Forest:-

Forests of Shivpuri forest division are mainly dry deciduous forest. As per Champion and Seth classification they are basically in following three categories:-

1-Dry Teak Forest

2-Northern Tropical Dry Mixed Deciduous Forest

3-Ravine Thorn Forest

Northen tropical dry mixed deciduous forest is the main type .Forest type wise mainly mixed forests are found in Shivpuri division. Apart from this patches of Dhawda, Khair, Kardhai and Salai forests are also present. The prominent species of this division are Dhawda Palas, Kardhai, Salai,

Mahua, Kullu in the top canopy. Middle canopy is occupied by Ber, Ghont, Khair, Remjha etc. Division has got very good grasslands in the form of old grassbirs and Panwar, Guner, Kel, Machoi, Lampa and Lapusari are the main grasses. Teak species is present in very small area of Pohri range. Commercially khair is the most important species of the division and khair tree used to be supplied to industries for kattha preparation.Except in Pohri range the regeneration status in the forest is inadequate . No bamboo forest is present in Shivpuri division which is rich in pasture lands .There are about 82 grassbirs in the division which are potential source of good fodder in the district. District is also a prominent centre for MFP trade.The important medicinal plants present in the district are Satawar, Kalihari, Safed Musli, Harsingar, Shankhpushpi, Indigo, etc. The distribution of forest area in the division is as follows:-

Reserve forest	Protected Forest	Unclassified Forest	Total (ha.)
153762.09	148594.28	0	302356.37

5.15.2 Wildlife:-

The rich biodiversity and geological formations of Shivpuri division provides suitable habitat for various wild animals. The division is adjoining to Madhav National Park which used to be hunting ground for earstwhile rulers of Gwalior state. Even now presence of tiger is occasionally reported in the forest of Satanwara and Pohri. The other main mammal species found in the area are Leopard, Sloth bear, Jackal, Hyena, Spotted Deer, Chinkara, Barking Deer, Sambhar, Neel Gai, Black Buck etc. Grey Pelican, Little Cormorant, Darter, Peafowl, Myna, Partridge, Coots, Vulture, Grey Heron, Nakta, Common Teal, Ring Dove, Golden Backed Woodpecker are the prominent bird species found in the area. In Shivpuri division there is one Karera bird sanctuary also which was established for the conservation of Son chirraya (Great Indian Bustard) bird.This sanctuary is completely in nonforest area but now the sighting of the Son chirraya bird has become very rare.

5.15.3 Dependence on Forest:-

There are 1305 revenue villages in Shivpuri district out of which 983 villages are situated within 5 km. periphery of the forest area. According to working plan estimates following forest produce are required to meet the annual demand of the population:-

Sr No.	Item	Annual Requirement
1	Timber	28050cmt.
2	Fuelwood	20.40 lac qt.
3	Bamboo	34000 no.
4	Fodder	137.70 lac qt.
5	Thorny Bushes	1.36 lac qt.

Villagers require thorny bushes for fencing their agricultural fields and this is being provided as per nistar right.Demand of forest produce is huge but the forests of the district are unable to meet this demand. Similarly for fodder also the difference between demand and supply is tremendous. There are 1083214 cattle in the district which make 1328718 cattle units whereas the grazing carrying capacity of the forest is only 451283 cattle units. Therefore the grazing pressure is 3 times more and this has put a great impact on the health of the forest also. Apart from this Shivpuri is on the scheduled path of migratory cattle coming from Rajasthan state and every year lacs of cattle migrates through these paths which put additional pressure on the forest.

5.15.4 Joint Forest Management:-

There are 1305 village in the district out of which 940 villages are situated within 5 km of the forest boundary. To ensure active participation of these villagers in forest protection and management 336 Village Forest Committees and 57 Forest Protection Committees have been constituted and an area of 1062 sq. km. has been assigned to these committees.

5.15.5 Demography:-

As per2011 the census data of the district are as follows:-

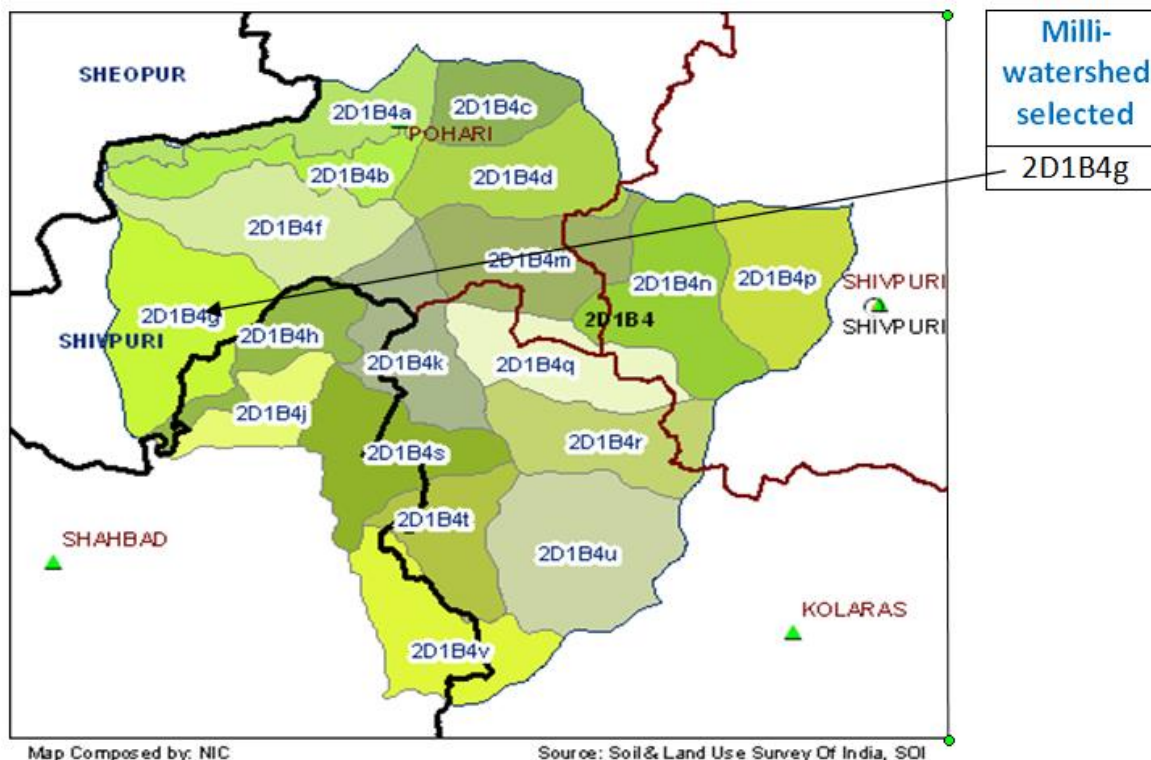| Total area of the district		10066 sq. km.
Literacy rate		62.5 %
No. of villages		1305
No. of households		358821
Population	Rural	1430627
	Urban	295423
	Total	1726050
Population	Male	919795
	Female	806255
	Total	1726050
Scheduled caste population		321515
Scheduled tribe population		227802

Scheduled Caste form 18.63% of the population where as Scheduled Tribe are about 13.20% of the population.The main occupation in the district is agriculture and 29.03% of the worker population i.e. 220440 people work as a agricultural laborers.
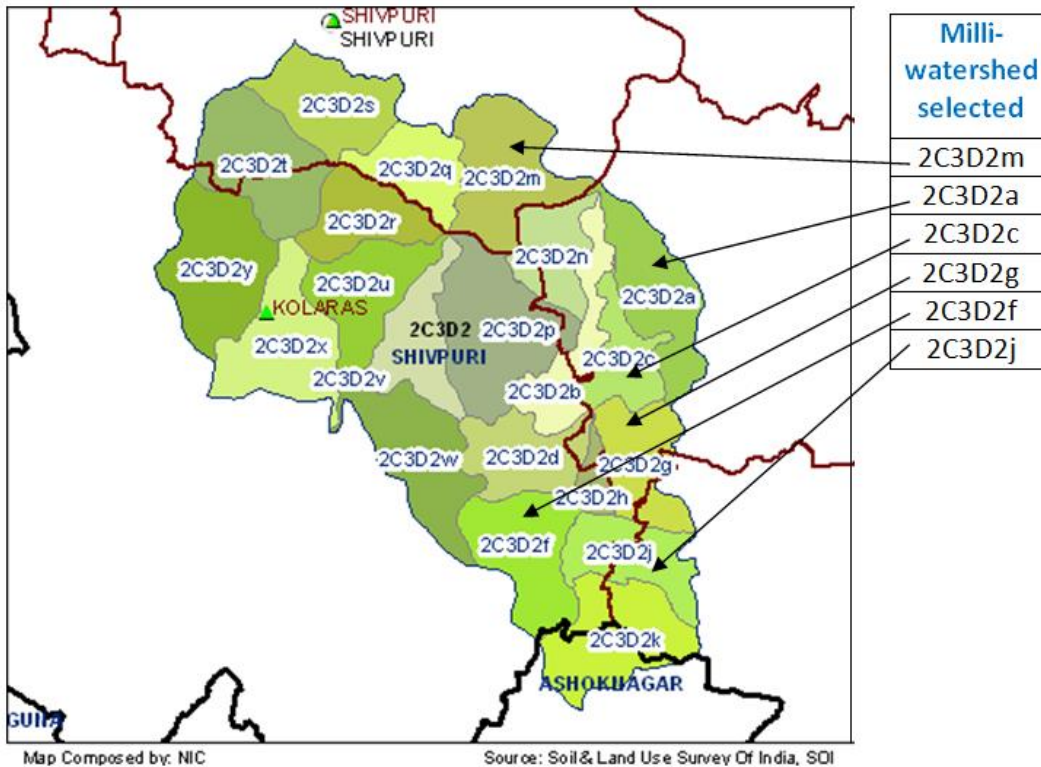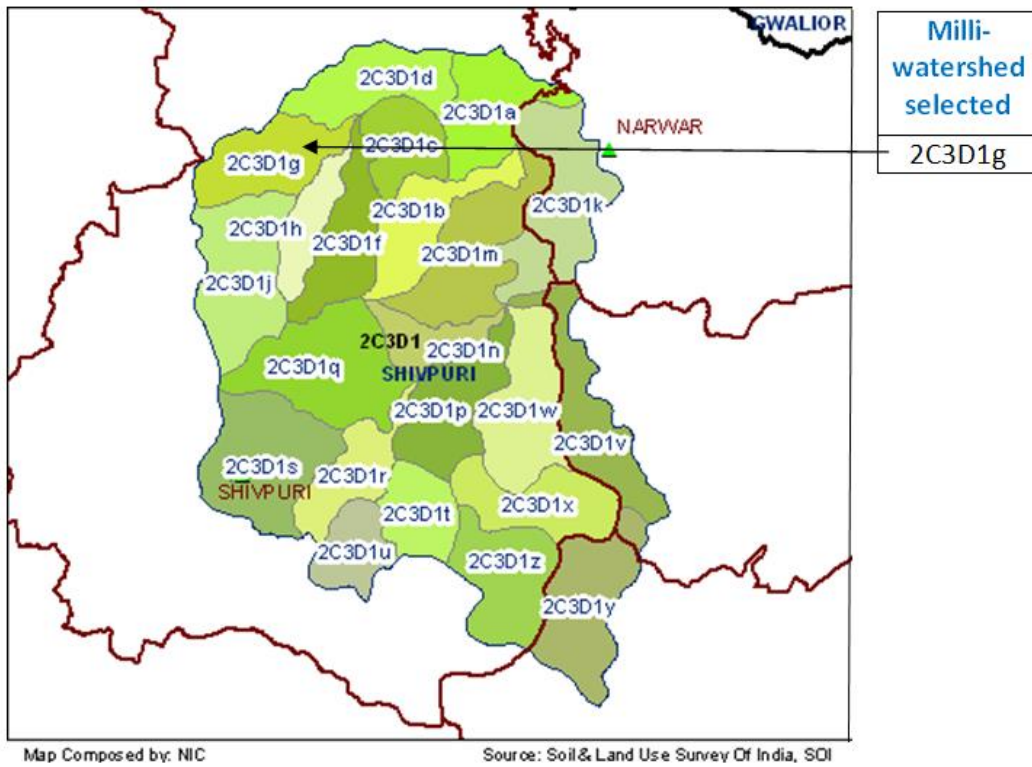
5.15.6 L-2 Landscapes selected in Shivpuri District:-

Following 8 milli watersheds of the Shivpuri division have been selected as L2 landscapes:-

No.	Milli-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C3D1g	1473.843	2466.24	297.028	4237.111	519.334	4756.445
2.	2C3D2a	597.076	1146.622	1495.915	3239.613	3599.754	6839.367
3.	2C3D2c	0	941.755	1957.894	2899.649	751.134	3650.783
4.	2C3D2f	0	65.003	3578.017	3643.02	3254.409	6897.429
5.	2C3D2g	0	0	2968.335	2968.335	2279.483	5247.818
6.	2C3D2j	0	0	851.554	851.554	4244.303	5095.857
7.	2C3D2m	588.648	2954.06	711.075	4253.783	3541.842	7795.625
8.	2D1B4g	387.817	3813.266	399.121	4600.204	4617.219	9217.423
Total		**3047**	**11387**	**12259**	**26693**	**22807**	**49501**

Thus the milliwatersheds selected as L2 landscapes in Shivpuri division have an area of 49501 ha. These 8 milli-watersheds are the operational units for implementation of GIM. All the 8 milliwatersheds possess forest as well as non forest area. These 8 milli-watersheds have 58 microwatersheds out of which 46 microwatersheds have forest as well as non forest area whereas remaining 6 microwatersheds are almost completely in forest area and other 6 microwatersheds are completely in non forest area .The forest area in the milli –watersheds is largely open forest and blank forest which needs measures to regenerate it into a dense forest.

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Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

Map Composed by: NIC   Source: Soil & Land Use Survey Of India, SOI

5.15.7 L3 landscapes selected in Shivpuri District.

The 8 milli-watershed selected as L2 landscapes have further been divided into total 58 micro-watersheds which are the working unit of the GIM. All the micro-watersheds of a particular milli-watershed have been taken up for treatment so that the milli-watershed is completely treated. The milli-watershed wise description of these micro-watersheds is as follows:-

5.15.7.1 Milli-watershed no. 2C3D1g:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C3D1g1	124.374	158.165	18.52	301.059	14.511	315.57
2.	2C3D1g2	582.894	270.878	0.534	854.306	78.282	932.588
3.	2C3D1g3	2.971	60.494	14.012	77.477	377.81	455.287
4.	2C3D1g4	272.37	390.706	10.107	673.183	0	673.183
5.	2C3D1g5	380.364	839.562	46.172	1266.098	1.493	1267.591
6.	2C3D1g6	110.87	746.435	207.683	1064.988	47.238	1112.226
	Total	**1473.843**	**2466.24**	**297.028**	**4237.111**	**519.334**	**4756.445**

5.15.7.2 Milli-watershed no. 2C3D2a:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C3D2a1	337.158	363.251	90.353	790.762	140.129	930.891
2.	2C3D2a2	225.897	351.368	0.13	577.395	638.847	1216.242
3.	2C3D2a3	32.952	72.875	81.034	186.861	323.99	510.851
4.	2C3D2a4	1.069	151.543	357.738	510.35	452.623	962.973
5.	2C3D2a5	0	0	338.237	338.237	679.794	679.794
6.	2C3D2a6	0	207.424	304.685	512.109	316.868	1167.214
7.	2C3D2a7	0	0.161	214.204	214.365	261.744	476.109
8.	2C3D2a8	0	0	109.534	109.534	785.759	895.293
	Total	**597.076**	**1146.622**	**1495.915**	**3239.613**	**3599.754**	**6839.367**

5.15.7.3 Milli-watershed no. 2C3D2c:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C3D2c1	0	0	4.108	4.108	307.436	311.544
2.	2C3D2c2	0	183.027	222.923	405.95	156.954	562.904
3.	2C3D2c3	0	401.589	214.278	615.867	26.401	642.268
4.	2C3D2c4	0	318.572	80.605	399.177	0.378	399.555
5.	2C3D2c5	0	35.199	819.863	855.062	256.833	1111.895
6.	2C3D2c6	0	3.368	616.117	619.485	3.132	622.617
	Total	**0**	**941.755**	**1957.894**	**2899.649**	**751.134**	**3650.783**

5.15.7.4 Milli-watershed no. 2C3D2f:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C3D2f1	0	0	347.942	347.942	164.741	512.683
2.	2C3D2f2	0	0	329.543	329.543	646.674	976.217
3.	2C3D2f3	0	0	849.795	849.795	409.506	1259.301
4.	2C3D2f4	0	64.469	512.987	577.456	86.579	664.035
5.	2C3D2f5	0	0	710.599	710.599	49.154	759.753
6.	2C3D2f6	0	0	134.761	134.761	557.755	692.516
7.	2C3D2f7	0	0	328.309	328.309	536.885	865.194
8.	2C3D2f8	0	0.534	364.081	364.615	803.115	1167.73
Total		**0**	**65.003**	**3578.017**	**3643.02**	**3254.409**	**6897.429**

5.15.7.5 Milli-watershed no. 2C3D2g:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C3D2g1	0	0	518.561	518.561	397.986	916.547
2.	2C3D2g2	0	0	347.605	347.605	87.82	435.425
3.	2C3D2g3	0	0	662.379	662.379	80.153	742.532
4.	2C3D2g4	0	0	491.002	491.002	193.926	684.928
5.	2C3D2g5	0	0	195.277	195.277	232.393	427.67
6.	2C3D2g6	0	0	212.085	212.085	498.876	710.961
7.	2C3D2g7	0	0	541.426	541.426	788.329	1329.755
Total		**0**	**0**	**2968.335**	**2968.335**	**2279.483**	**5247.818**

5.15.7.6 Milli-watershed no. 2C3D2j:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C3D2j1	0	0	674.896	674.896	506.715	1181.611
2.	2C3D2j2	0	0	29.053	29.053	1309.693	1338.746
3.	2C3D2j3	0	0	100.144	100.144	644.431	744.575
4.	2C3D2j4	0	0	0	0	469.881	469.881
5.	2C3D2j5	0	0	1.205	1.205	312.81	314.015
6.	2C3D2j6	0	0	46.256	46.256	1000.773	1047.029
Total		**0**	**0**	**851.554**	**851.554**	**4244.303**	**5095.857**

5.15.7.7 Milli-watershed no. 2C3D2m:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2C3D2m1	112.562	396.046	145.829	654.437	54.634	709.071
2.	2C3D2m2	3.536	572.37	44.375	620.281	91.291	711.572
3.	2C3D2m3	39.193	149.974	48.551	237.718	742.009	979.727
4.	2C3D2m4	0	477.177	91.487	568.664	399.26	967.924
5.	2C3D2m5	0	45.481	1.441	46.922	450.924	497.846
6.	2C3D2m6	182.621	68.636	0	251.257	357.514	608.771
7.	2C3D2m7	82.162	579.36	287.026	948.548	277.872	1226.42
8.	2C3D2m8	0	325.49	63.09	388.58	581.935	970.515
9.	2C3D2m9	168.574	339.526	29.276	537.376	586.403	1123.779
Total		**588.648**	**2954.06**	**711.075**	**4253.783**	**3541.842**	**7795.625**

5.15.7.8 Milli-watershed no. 2D1B4g:-

The micro-watersheds selected in this milli-watershed are as follows:-

No.	Micro-watershed No.	Forest Area				Non Forest Area	Total Area (ha.)
		Dense Forest	Open Forest	Blank Forest	Total		
1.	2D1B4g1	277.187	1036.085	49.433	1362.705	91.632	1454.337
2.	2D1B4g2	17.087	608.349	121.285	746.721	804.115	1550.836
3.	2D1B4g3	0	377.159	84.841	462	335.653	797.653
4.	2D1B4g4	54.13	1254.392	29.871	1338.393	383.625	1722.018
5.	2D1B4g5	39.413	537.281	113.691	690.385	476.897	1167.282
6.	2D1B4g6	0	0	0	0	976.501	976.501
7.	2D1B4g7	0	0	0	0	822.614	822.614
8.	2D1B4g8	0	0	0	0	726.182	726.182
Total		**387.817**	**3813.266**	**399.121**	**4600.204**	**4617.219**	**9217.423**

5.15.8 Reason for selection of L2 landscapes:-

- The area is ecologically important and falls in the catchment area of perennial rivers like Sindh, Betwa, Kuno, Parwati and Mahuar.

- Landscape is biodiversity rich area and known for variety of medicinal plants.

- 82 % of the population lives in the rural area and many of them live below poverty line.

- Landscape is facing tremendous biotic pressure. The level of dependence on forest is high.

- Presence of schedule tribes specially Sahariyas in selected L2 landscapes, which require livelihood opportunities.

- The livelihood opportunities are less. There are no industries working in the area. Old Kattha manufacturing units are also now almost closed.

- Income from agriculture is meager. The percentage of irrigated crop area is very small.

- Most of the forest is either open forest or degraded forest which needs special treatment.

- Old mining area damaged by legal and illegal mining needs reclamation.

- Preperatory activities for GIM were undertaken in Shivpuri Division.

5.15.9 Possible solutions to enhance forest cover, improve ecosystem services and address the drivers of degradations:-

- Effective management to combat biotic pressure - It will be achieved through efficient fire management, regularizing the grazing, control on illicit felling, enhancing fodder, fuel wood, bamboo, small and NTFP production through plantation of selective species.

- Enhancement of forest cover in forest and non forest area - It will be achieved through plantation of suitable species in forest and non forest area.

- Soil and water conservation - It will be achieved through watershed treatment methodology i.e. the treatment from ridge to valley of the watershed.

- Reduction in the degree of dependence on forest- Reduction in the degree of dependence on forest will be achieved through promotion of alternate energy sources.

- Reclamation of mining area.

5.15.10 Proposed interventions:-

- Capacity building of Forest department and JFMC

- Empowerment of local communities and making them active partners in forest protection and development.

- Forest Protection and maintenance activities.

5.15.11 Cross cutting interventions proposed:-

- Improving fuel-wood efficiency and promoting alternative energy sources.

- Convergence with schemes of other departments.

5.15.12 Livelihood improvement activities proposed:-

- Various livelihood activities such as Dairy Farming, NTFP based livelihoods, Kirana store, sewing machine, Poultry farming, Honey Collection Bee Keeping, Dona pattal manufacturing and Fisheries will be taken up in selected villages.

- Skill upgradation Trainings will be imparted to the villagers.

- Mechanism for value addition of NTFP shall be introduced.

5.15.13 Area proposed to be treated under different sub missions in Shivpuri District:-

S. No	Submission	Area to be treated					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
1.	Submission 1 (a) Moderately dense forest cover, but showing degradation	960	975	980	0	0	2915
2.	Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks	3737	3800	3500	0	0	11037
3.	Submission 1 (b) Type B Eco-restoration of degraded open forest with limited root stocks and open blanks	290	295	300	0	0	885
4.	Submission 1 (b) Type C Eco-restoration of degraded open forest of largely open areas with sparse undergrowth	838	840	845	0	0	2523
5.	Submission 1 (c) Restoration of grasslands	1113	1125	1130	0	0	3368
6.	Submission 2 (f) Restoration of abandoned mining area	80	90	100	0	0	270
7.	Submission 3(a) Plantation in urban and peri urban areas	10	12	10	0	0	32
8.	Submission 4(a) Agro-forestry and social forestry in farmer's land including current fallows	980	990	1000	0	0	2970
9.	Submission 4 (c) Agro-forestry and social forestry in Highway/Rural roads/canals/Tank Bunds	275	280	285	0	0	840
10.	Submission 5 Restoration of wetlands	40	30	20	0	0	90
	Total	**8323**	**8437**	**8170**	**0**	**0**	**24930**

A total 24930 ha. area is proposed to be treated. Maximum emphasis has been given on Submission 1 (b) Type A Eco-restoration of degraded open forest with plenty of root stocks.

Abandoned mining area shall be taken up for reclamation and restoration work to be carried out in old water tanks.

5.15.14 Budget for Shivpuri district:-

Submission wise budget summary for Shivpuri district is given below-

Financial Year	Amount (in Rs. Lakhs)			
	Submissions	Energy Saving devices	Supporting Activities	Total
2016-17	2259.81	48.048	807.75	3115.61
2017-18	4696.32	39.468	1657.53	6393.31
2018-19	5927.55	30.261	2085.24	8043.05
2019-20	4047.81	21.945	1424.42	5494.17
2020-21	1984.82	15.84	700.23	2700.89
Total	**18916.31**	**155.56**	**6675.16**	**25747.03**

A total Rs 257.47 cr. is proposed to be spent on the activities selected.Details of budget for Shivpuri Divisiion is given in given Annexure xviii.

ANNEXURES

BUDGET ESTIMATE AND AREA PROPOSED UNDER DIFFERENT SUBMISSIONS FOR THE STATE